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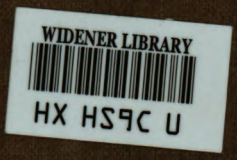

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Essex Agricultural Society.

REPORTS OF COMMITTEES,

AND

PREMIUMS AWARDED IN 1829;

AND A LIST OF

PREMIUMS OFFERED IN 1830;

WITH

REMARKS AND HINTS TO FARMERS, &c.

PAMPHLET No. IX, 1829.

PUBLISHED BY ORDER OF THE SOCIETY....MARCH, 1830.

SALEM:
W. & S. B. IVES, PRINTERS....OBSERVER OFFICE.
1830.

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REPORTS

OF THE

Essex Agricultural Society in 1829.

I. ON THE MANAGEMENT OF FARMS.

The Committee of the Essex Agricultural Society for viewing farms, entered for premiums in 1829, have attended to that service and submit the following

REPORT.

Six farms were entered for premiums, viz:—
The farm of Amos Gould, of Ipswich;
Moses Litttle, of West Newbury;
Daniel Putnam, of Danvers;
John Adams, David Gray, James Stevens, } of Andover.

These farms were examined by the Committee the first part of July, and again in September.

The farm of Mr. Gould is situated in the north part of Ipswich, near Topsfield, and contains about three hundred acres, viz.

8 acres Corn and Potatoes
6 do. English grain
20 do. Upland mowing
35 do. Meadow and Salt Marsh
200 do. Pasture
13 do. Waste land.

The first 100 acres of this farm Mr. Gould purchased nineteen years ago, and the rest he has added at different times since. The committee were much pleased with the improvements made on this farm, by its present owner. These have been prosecuted with uncommon industry and perseverance. A great portion of this farm is a light gravelly soil, and the general aspect by no means

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promising. When Mr. Gould came into possession it was in a bad condition—had been occupied many years by tenants and the land exhausted, producing not more than three tons of English hay and 20 tons of meadow and salt hay in a year. Mr. Gould has built on it 700 rods of good substantial stone wall; planted 700 apple trees, a great portion of which bear fruit; has reclaimed three or four acres of wet meadow, and converted it into very productive grass land; besides erecting convenient barns and out houses for the use of the farm. He keeps from 20 to 30 head of cattle, and in summer takes 15 or 20 to pasture for others. This farm and the improvements, and stock on it, free from all debts and incumbrances, are entirely his own acquisition—the fruit of the industry and economy of himself and family.

The farm of Mr. Little, in West Newbury, consists of about 100 acres. Twenty-four acres are improved for mowing and tillage, about 7 acres of which are in tillage annually; and two acres of fresh and salt meadow. His orchard, occupies about 10 acres exclusive of the trees by the fences inclosing his tillage land, and is used as a pasture for sheep and horses. There are 33 acres of pasture and 11 acres of wood-land.. He has 50 pear trees, raised from the seed and grafted with various kinds of summer, autumn and winter pears—all of them in a bearing state; and 30 peach trees, which produce about 10 bushels annually. The soil on this farm is in general very good, and a great portion of it well cultivated, and produces good crops. Since the farm came into the possesson of Mr. Little, the produce has been nearly doubled. This has been done chiefly by making large quantities of manure, frequent ploughings, and top dressings where ploughing is not practicable. He cuts about 45 tons of hay—25 of which are good upland hay; and raises about 160 bushels of corn, 25 of wheat and 20 of oats. The buildings on this farm are convenient and well placed. Mr. Little is an ingenious mechanic, as well as a good farmer, and many of his farming utensils, as well as some of his buildings, are his own workmanship.

Mr. Daniel Putnam's farm was so fully described, in the report of last year, that it is unnecessary to go into particulars the present. The committee remarked the steady and judicious course of management on this farm. Mr. Putnam observes the rule which every farmer should keep in mind, but which some enterprizing farmers forget, viz: not to attempt more than he can perform, not

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to try to subdue more land than he can cultivate thoroughly and manure well, so that it will bear good crops. The produce of his dairy from 8 cows, was 1127 pounds of butter, besides furnishing milk for a very large family, perhaps equal to the milk of two cows. The most effectual means used in the improvement of this farm, are the making and judicious application of large quantities of manure. This is a subject which the committee think more than any other requires the attention of the farmers of Essex.

The farm of Mr. David Gray has been repeatedly described in the Reports of this Society, and he has more than once obtained the premium offered for farms. It is sufficient to state, that Mr. Gray's farm exhibits proofs of the same persevering industry and good management, which have distinguished it before; that he continues the same judicious course of improvement, and is gradually rendering his farm more productive. Every farmer in New England knows that abundance of manure is necessary to the continued production of good crops. Mr. Gray is of opinion that every farmer has the means of making manure sufficient for his land. The committee think there is much truth in this, and his own experience tends to confirm it.

The farm of John Adams, Esq. in Andover, consists of about 113 acres of improved land, and 119 acres of woodland. The pasturage amounts to 54 acres, most of which has been ploughed and improved. He has 19 acres of natural meadow and swamp land in good grass, and about 35 acres in alternate husbandry for corn, English grain, and grass. In tillage from 10 to 12 acres annually, producing about 200 bushels of grain and 350 of potatoes. His average number of cattle is 25, including 6 or 8 oxen and 10 cows. He has a large number of apple trees, and makes about 100 barrels of cider annually. Mr. Adams has considerably improved the condition of his farm and his operations seem to have been conducted with skill and success. The soil of this farm appears in general good, but it is hilly and in some places rocky, and a large proportion of it more suited to pasture than tillage.

The farm of Mr. James Stevens, in Andover, contains about 90 acres, exclusive of woodland, viz :—about 12 acres in tillage, 36 or 38 acres of mowing, and the rest pasture. The land is in general level, the soil somewhat moist and cold, but strong, and when well cultivated, capable of producing great crops of most kinds, especially of grass. Mr. Stevens has done much to improve it, and the

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produce now is double the amount it was ten years ago. Much however remains to be done, and few farms afford a better field for improvement. Perhaps no farmers in the county have a stronger inducement to an active and enterprizing cultivation than those of Andover; as no place in the county affords a better market for agricultural commodities. Mr. Stevens has made a great improvement in ten acres, of what was formerly pasture land, but so cold and wet and so much covered with bushes, as not to yield feed enough for two cows. The last season the produce of this field was 11 tons of English hay of the first quality, 90 bushels of corn, and 150 of potatoes.

The committee recommend that the premiums be awarded as follows:—

To Daniel Putnam, the third premium,	$24
" Amos Gould, the fourth premium,	21
" Moses Little, the fifth premium,	18
" John Adams, the sixth premium,	15
" James Stevens, seventh premium,	12

The committee were of opinion that no farm offered was entitled to the first or second premium.

The committee would suggest, as very desirable, that candidates for the premium on farms should in future furnish a more particular and exact statement of the soil, modes of cultivation, different kinds of produce, the labour employed and the amount and value of each crop. The description required by the Massachusetts Agricultural Society in their offer of a premium for the best cultivated farm, is recommended to the attention of the farmers of Essex, who may claim a similar premium for this county, not however as being indispensable in every particular, but as a useful guide to them in making their statements.

Respectfully submitted, by the Committee,

FREDERICK HOWES,
DANIEL ADAMS,
JESSE PUTNAM,
JOHN ADAMS,
JAMES H. DUNCAN,
MOSES NEWHALL,
JOHN W. PROCTOR.

December 28, 1829.

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AMOS GOULD'S STATEMENT.

To the Committee of the Essex Agricultural Society on Farms.

GENTLEMEN—My farm is situated in Ipswich, near Topsfield, and contains in the whole about three hundred acres of land. I cultivate annually about eight acres with corn and potatoes;—about six acres with English grain. I have annually about twenty acres of English mowing, and about thirty-five acres of meadow and salt marsh. I have about eighteen acres of wood land, and about two hundred acres of pasture land.

The stock on my farm usually consists of one horse, between twenty and thirty head of horned cattle through the year; in the summer, I take in from fifteen to twenty head of cattle to pasture—twenty sheep through the year,—and about the same number taken in to pasture in the summer.

This farm I purchased about nineneen years since; it then contained about one hundred acres—the other parts I have added to it at different purchases made since. At the time I purchased, it had been tenanted for many years, and was entirely *run out*—the fences were in a bad condition, and it did not yield more than three tons of English, and twenty tons of meadow and salt hay, in a year.

Since that time I have been gradually endeavouring to improve the farm, by such means as were in my power; and these were my own labour, and the produce of my land. What I have, I have earned myself, and what I possess, I own without any incumbrance, or claims from any one to my knowledge.

I have made upon the farm seven hundred rods of good and permanent stone walls. I have set out and planted, seven hundred apple trees, many of which are now in a thrifty and bearing condition. I have ditched and drained several acres of the wet meadow lands, and raised the same; so that this is now my most productive grass land. I have added to, and enlarged my buildings, so that they are now convenient for the purposes of my farm.

MANURE. I make from eighty to one hundred loads of manure annually, in my barn yard, and hog pen, by hauling in loam, and other materials collected from ditches, and about the farm. This, together with the droppings from the cattle, make about 150 loads in a year; I mix the two kinds together, before I use it upon the land,—thinking that more benefit is obtained by thus applying it.

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DAIRY. We have usually kept ten or twelve cows, and used the milk for the making of butter. The present year we have had but 8 cows. We have sold more than 400 pounds of butter, and made 600 pounds of cheese, besides the milk used by a large family. I kept less cows the present season than usual, in consequence of my my assistance in the house, being less; and thinking it as well to use my land for feeding of cattle, as to hire additional help in my family.

LABOUR. Myself and one man through the year—another man five and a half months—two boys, one 14 years old, another 12 years old—have hired 12 days work. Have worked out with my team to the amount of about one hundred dollars.

The produce of my farm, as near as I can ascertain it, is as follows:—

	1828.	1829.
English Hay,	30 tons	20 tons
Meadow and Salt Hay,	50 tons	40 tons
Indian Corn,	250 bushels	175 bushels
Potatoes,	250 bushels	300 bushels
Cider, a small quantity in each year—		
Pork,	1400 pounds	1700 pounds
Beef,	2000 pounds	1000 pounds
Rye,		40 bushels
Oats and Barley cut for fodder,		2 tons.

Nine calves, sold for forty-five dollars, at four weeks old.

Had I have known in the early part of the season, that a minute account of my produce would have been expected, I could have been more particular—I have endeavoured not to over rate it.

AMOS GOULD.

November 30*th*, 1829.

MOSES LITTLE'S STATEMENT.

To the Committee on Farms for 1829.

GENTLEMEN—Agreeable to your request, I transmit to you the following account of the management of my farm. My farm is situated in West-Newbury, and contains about one hundred acres, twenty-four of which I improve as mowing and tillage; of this I plant from four to five acres with corn and potatoes annually, and

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sow from two to three acres, the remainder I use for mowing. I also mow twenty-two acres of fresh and salt meadow. I have about ten acres of orcharding, exclusive of those trees which are by the fences, that inclose my tillage land, the most of which I have raised from the seed, and I use the land where my trees are, chiefly for pasturage for sheep and horses. I have eleven acres of wood land, and thirty-three of pasture land. I have fifty pear trees, the most of which I have raised from the seed and ingrafted them with various kinds of summer, fall, and winter fruit, and all of them are in a bearing condition; I also have thirty peach trees, the average crop of which is ten bushels.—The stock, which I keep, consists of from sixteen to eighteen head of neat cattle. I have seven cows, four oxen, and five young cattle, two horses, from twelve to fifteen sheep, and from four to seven swine.

Manner of making Manure. During the winter months, I litter my barn yard with meadow hay, where I yard my stock, which remains there until about the last of November, occasionally replenishing it with meadow mud and stuff, which is gathered from under fences and other places on the farm. I carry into my hog yards wash from the road, meadow mud, and the droppings from my horses, that the same may be mingled together by them and recieve their fertilizing properties. The quantity of manure which I make in this manner is about one hundred and fifty common carts full, sixty of which are made in winter, about fifty are made during the summer and fall months in my barn yard, and about forty which I take from my hog yards annually.

Manner of preparing my Tillage Land. I plough up my grass land in the spring, but a short time before I want to plant it, then harrow and furrow it about three feet a part, and manure it in the hills with hog and sheep manure for potatoes;—the next year I plant it with corn. I spread from twenty to twenty-five common carts full of my winter manure on an acre, then plough and harrow it, and furrow it about four feet a part, and put from ten to twelve common carts full of my summer manure, which is placed on the ground the autumn before in the hills; the next year the land is in good order to lay down to grass. Then I give it a small dressing with fine manure, plough it, and sow it with wheat, or oats, and herds grass seed only. In this manner, I go over with my field land once in four or five years; except a few acres, which is of a heavier soil. I usually top dress, with fine manure and materials

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which are gathered from my watering places, once in four or five years.

Since I have had the management of this farm, (which is about twenty years) I have made six acres of my field land out of a rough, stoney and almost barren pasture. Five acres of my orcharding are on land which I took in its natural state, covered with trees, bushes and full of small stones, the produce of which land was scarcely any thing.

The stone wall which I have built is five hundred rods, the stones for which, some of them were near, and some of them at the distance of half a mile; the most of this I have done at intervals, with the ordinary labor which has been employed to manage the farm. I have my farm now all fenced with a good stone wall, on the out side; my cross fences and the fences round my orchards are stone wall, with the exception of about fifty rods.

Since this farm came into my hands, I have, by paying attention to making manure, stiring the soil often, and where it has not been practicable to plough, top dressing made the farm to produce nearly double that it formerly did.

The produce of my farm the present year is:—

English Hay, -	25 tons	Beats, - -	3 bushels
Salt and Fresh Hay,	20 "	Beans, -	5 "
Indian Corn in the ear,	317 bush.	Squashes, -	800 pounds
Wheat, - -	25 "	Pumpkins, -	12 carts full
Oats, - - -	20 "	Cider, - -	11 barrels
Pears, - -	8 "	Winter Apples, -	33 "
Onions, - - -	3 "	Cabbages, -	10 dozen
English Turnips, -	3 "	Pork, -	1000 pounds.

This is the produce of my farm the present year, besides peas, beans, and vegetables of all kinds sufficient for two families.

I have since the third day of last March, raised twenty-nine pigs, which sold from two dollars to two dollars fifty cents each.

The produce of seven cows is as follows:—

Cheese 900 pounds, mostly new milk.

Butter 299 pounds, besides the milk used in two families, one consisting of seven, the other of five persons.

The labour employed to manage the farm, from the first of December, 1828, to the first of December, 1829, is myself and son;—I have paid for labour twenty-one dollars and seven cents;—labour done by myself and son at mechanical business, amounts to sixty seven dollars and fifty cents.

MOSES LITTLE.

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DANIEL PUTNAM'S STATEMENT.

To the Committee on Farms, of the Essex Agricultural Society, 1829.

GENTLEMEN—For an account of my farm, as to the quantity of land which it contains, the quantity which is tilled, the quantity pastured, and for an account of my trees, stock, and means and manner of making manure, I would refer to the statement made by me last year;—which may be found commencing on the 23d page of the pamphlet published in 1829.

I have only to add to that statement, that I have this year been preparing about three acres of rough pasture land for tillage.

The products of my farm this season have been as follows:—

English Hay,	20 tons
Meadow Hay,	8 "
Second Crop,	1½ "
Indian Corn, 380 baskets, each weighing 43 pounds, making in the whole 16340 pounds; allowing 80 pounds for a bushel, we have 204 bushels and one peck.	
Barley,	35 bushels
Potatoes,	530 "
Turnips,	265 "
Pears,	8 "
Summer Apples,	40 "
Winter Apples,	40 barrels
Cider,	10 "
Cheese, (two meal)	115 pounds
Milk sold,	60 gallons
Butter,	1127½ pounds
Pork,	2000 pounds
Calves, (eight) from the cows, sold for	44 dollars.

Besides the above, the farm has yielded peas, beans and vegetables of all kinds, sufficient for the use of a family which consisted during 4 months of the season of 20 persons, and at no time of less than 12. I would say here that the quantity of winter apples on the farm, both the last year and this, has been less than usual; the average crop is from 80 to 100 barrels. I have had 150 barrels in a year.

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A particular account of the proceeds of the Dairy.

In March we made		10 lbs of butter.
April 3		6
10		19
17		21
24		23½
		79½
May 1		24½
8		29½
15		35
22		41
29		30
		160
June 5		40½
12		49½
19		46
26		44½
		180½
July 3		40
10		40
17		33
24		32½
31		28
		173½
Aug. 7		33
14		31½
21		32
28		34
		130½
Sept. 4		32
11		32½
18		31
25		29½
		124½
Oct. 2		33
9		31½
16		35
23		31½
30		32½
		163

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Proceeds of the Dairy—amount brought over 1005½ lbs.

Nov.	6	26
	13	28½
	20	31½
	30	30
		122½
	Total,	1127½ lbs.

I have had this season eight cows. During the summer months, four or five of the family were accustomed to use milk both at breakfast and supper; and I suppose that we used in the family the milk of two cows or more.

Quantity of Labour from the first of November, 1828, *to the first of November*, 1829.

Myself the whole year—One man 10 months—Another man 9 months—And another man 5 months. Besides my own labour, there were 624 days work done upon the farm, and in the manufacture, that is, the cutting and preparing for those who make them of 13,000 pair of shoes—The shoes, (taking the estimate of Messrs. Putnam and Preston given in the pamphlet above referred to, page 26, as correct) would require the labour of one man for 375 days. Deducting these 375 days from the above 624—we have left for labour on the farm 249 days for one man, in addition to my own labour.

DANIEL PUTNAM.

Danvers, November 30th, 1829.

JOHN ADAMS'S STATEMENT.

To the Committee on Farms.

GENTLEMEN—The number of acres of land I improve is 113. Pasturage about 59 acres—the most of which has been ploughed and improved. My tillage land for raising corn, grain and grass, comprises about 35 acres. Natural mowing, meadow and swamp land includes 19 acres. Woodland, (principally young wood) is about 119 acres. I improve as tillage, for corn and grain from 10 to 12 acres annually. I raise from 40 to 50 bushels of corn upon an acre, and generally put my manure in the hill. I raise all the

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different kinds of small grain—such as wheat, rye, barley and oats—generally not far from 200 bushels in all annually. When I lay down my ground to grass, I carry on my winter manure and plough it in. My average number of horned cattle is about 25; two horses, and twenty sheep. My stock usually consists of from six to eight oxen, and ten cows—remainder young cattle. I generally sell, six or eight loads of English hay. I carry upon my farm about 120 loads of manure; 60 of which I put upon my corn hills. I raise about 350 bushels of potatoes a year. I have set out and engrafted a large number of apple trees, which are beginning to bear the best kind of fruit. My average number of barrels of cider is about one hundred a year. I pay for labour, which I hire, about 140 dollars annually.

JOHN ADAMS.

Andover, November 27th, 1829.

DAVID GRAY'S STATEMENT.

To the Committee of Farms in 1829.

GENTLEMEN—My farm, situate in the South Parish of Andover, contains about one hundred acres—about thirty acres is used for tillage and mowing—the remainder for pasturing. For a more particular description of my lands, I refer to my statements heretofore published by the Society.

I have planted the present year six acres, with corn and potatoes—the produce is as follows:—

Indian Corn in the ear, - - - - -	468 bushels
Potatoes, - - - - - - - - -	200 "
Pumpkins, - - - - - - - -	9 carts full
Round Turnips, - - - - - - -	20 bushels.

I sowed, the last spring about one and a half acres, with barley, oats, and flax, and obtained a good crop of each.

STOCK. I usually keep four oxen, eight cows, and a number of young cattle—making my stock on an average about twenty-six head of horned cattle—one horse, and fourteen sheep. This stock is fed with the fodder obtained from about twenty-five acres mowed annually;—and I usually sell from two to four tons of English hay.

I cannot state the number of pounds of butter and cheese made, not having kept a particular account of the same;—but can say,

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that I have found my dairy, when well attended to, one of the best sources of income, on my farm.

Orcharding. I have a large number of young and thrifty apple trees, in a bearing condition. They produce as well as any other trees that I have seen, and this without any extra expense of cultivation. They are scattered in different parts of my tillage and pasture land; and generally placed in the best soil, and where they would be most likely to grow. I have obtained from them about fifty barrels, of fall and winter apples, and about sixty barrels of cider the present season.

Labour. Two men and one boy have been employed on the farm. We have occasionally done labour with our teams off of the farm—amounting to half of the labour of one man, through the season.

For my methods of making manure,—clearing my lands of rocks, of which I have a plenty;—and fencing them with stone wall, at which I have done much,—I would refer to the statements before mentioned.

DAVID GRAY.

Andover, November 27th, 1829.

JAMES STEVENS 2d's STATEMENT.

To the Committee on Farms.

Gentlemen,—According to the best of my knowledge I give you an account of my farm and the management. My farm contains about ninety acres, exclusive of woodland. It is divided nearly as follows—about forty acres of pasturing, and the remainder mowing and tillage. I usually sow from four to six acres, and plant from six to eight acres, annually. The manner of preparing the land for the seed is as follows:—After the crop of grass is taken from the field, as soon as convenient I plough the ground, let it remain till spring, then I cross plough it. I usually plant the same land two years in succession. I then sow it with barley or oats, and lay it down to grass. My manner of applying manure to this land is, after the first ploughing in the spring I spread the green manure, made at the barn during the past winter, and plough it in deep so as to prevent evaporation. Manure that is made in the

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barn-yard, during the summer months, I cart out in the month of November, and lay it in large heaps. In the spring I cart out from my hog-yard all the manure to the same heaps taken from my barn-yard; I then have it all thrown over and mixed together; it is then prepared for the hill. I then put a large iron shovel full in a hill; and in this way, with a common season, I have a good crop of corn, generally from forty to fifty bushels to the acre.

Making Manure. I cart into my barn-yard a quantity of green sods, such as I get from the sides of the road, and muck taken from low wet places, this, together with what my cattle make during the summer months, is about forty loads. I also cart of the same material into my hog-yard at several different times, so as to enable my hogs to have a fresh supply of earth. My hog-yard is so constructed as to receive all the manure from my horses, and with the aid of my hogs I am able to take from the hog-yard about fifty loads in a year.

Grass Land. I have a variety of this kind of land. On my plough-land I generally get, three or four of the first seasons after sowing, from one and a half to two tons to the acre. It is generally ploughed once in about seven or eight years. I have not been in the habit of giving this kind of land a top-dressing. The last year, on about three acres, I spread thirty loads of manure from my barn-yard, and I was satisfied that it very much increased the crop of grass the present season. I have for a number of years put a top-dressing, composed of rich soil, wash, &c., on a number of acres not capable of being ploughed, and increased not only the quantity but also the quality. I think there is double the quantity of hay cut on my farm now that there was ten years ago.

Pasturing. This kind of land is generally cold, flat and much inclined to bushes. The improvement on this kind of land has principally been confined to about ten acres, with the exception of cutting bushes on the remainder. This ten acres, eight years since, would not yield feed sufficient to keep two cows through the season. It was principally covered with killamb, blue flag, &c. I have ploughed it, and part of it is left in ridges with ditches sufficient to drain it. The last season, according to the best of my judgment, without weight and measure, eleven tons of the first quality of English hay, about ninety bushels of corn, and about one hundred and fifty bushels of potatoes were taken from it—which,

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together with the labour may be valued at the moderate price of ten dollars per ton, - - - - $110 00

Ninety bushels of corn, at 75 cents per bushel - 67 50

One hundred and fifty bushels potatoes at 25 cents per bushel, - - - - - 37 50

Total value of the produce, labour included, - 215 00

On the above ten acres I have set out about seventy young apple trees; about fifty of them are grafted with the best of winter fruit. The orcharding on the rest of my farm is scattered. Many of the trees have within a few years been grafted.

My stock generally consists of one horse, sometimes two, and about fifteen head of neat stock, composed of four oxen, five cows, and the remainder young cattle, I commonly have from six to ten swine. I think I can estimate the labour on my farm not to exceed that of one man and a boy, with the exception of the hay season, when an additional man is necessary.

I am, very respectfully yours,

JAMES STEVENS, 2d.

Andover, November 25th, 1829.

II. IMPROVEMENT OF WET MEADOW LANDS.

The Committee on the Improvement of Wet Meadow Land, submit the following

REPORT:—

Parcels of improved meadow or swamp land were offered for examination to the Committee by

Mr. Jacob Osgood, of Andover;

Col. Jesse Putnam, of Danvers;

Rev. Henry Colman, of Salem, on his farm in Lynn.

Mr. Osgood has reclaimed about two acres of a bog meadow, so soft and spungy that it was very difficult to walk over it without sinking into the mire. The improvement, begun about fifty years ago, and continued from time to time since, has been by draining it,—then putting on sand to the depth of an inch and a half, and

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adding a small quantity of manure. By this process it has been converted into good mowing land. For a particular description of the process of reclaiming wet meadow land, in this and the following instances, the Committee would refer to the statements accompanying this report.

Col. Putnam has at different times reclaimed about two acres and three-quarters of wet meadow—the last acre and a quarter in 1827, 28 and 29—by ditching and carrying on sand in large quantities. Loam he thinks will not do for this purpose. The expence has been large, but the net income of the meadow since the improvement has amounted on an average to twelve dollars an acre annually. Both Mr. Osgood and Col. Putnam have in turn obtained the first premium offered by this Society for the best cultivated farm.

Mr. Colman's reclaimed meadow on his farm in Lynn, near Salem, was examined by the Committee. Several acres of wet land, nearly worthless before, have been effectually drained and and now produce large crops in grass and tillage. This improvement has been made by means of covered drains, excepting the main drain, and the operation seems to have been conducted in a very judicious and economical manner. The Committee think the mode adopted by Mr. Colman a very good one, and perhaps the best where it is practicable. For a very satisfactory account of this improvement they would refer to his statement. This farm has been but three or four years in the possession of Mr. Colman; and the Committee are not acquainted with any farm in the County where greater improvements have been made in so short a time, or prosecuted with more judgment and on a better system.

The farm of the late Col. Pickman, of Salem, now owned by his family, and occupied by Mr. Erastus Ware, was visited by your Committee. This farm, which is known to be among the largest and best cultivated farms in the County, has been described in a former report to this Society. Agriculture is carried on by Mr. Ware with skill and success, and the farm is becoming gradually more rich and productive.

As only a part of the Committee were able to visit and examine the Meadows entered for premiums in two instances; your Committee think it may be more satisfactory to refer the award of the premiums altogether to the decision of the Trustees.

Respectfully submitted,

F. HOWES, *Chairman.*

December 30, 1829.

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At a meeting of the Trustees of the Essex Agricultural Society: the premiums on the Improvement of Wet Meadow Lands were awarded as follows:—

Rev. Henry Colman, 1st premium, - - 20 dollars.
Col. Jesse Putnam, 2d premium, - - - 10 "

HENRY COLMAN'S STATEMENT.

To the Committee of the Essex Agricultural Society on Reclaimed Meadow.

GENTLEMEN—The reclaimed meadow which I propose for the examination of the Committee of the Essex Agricultural Society contains more than one acre and a quarter.

In the fall of 1827 I began clearing it. There were many bushes to be cut down and it was covered with coarse grass and rushes. A large part of it was constantly overflowed or filled with water, presenting a deep, miry, peaty soil, and scarcely in some places passable for a man, much less for cattle. In some parts the peat soil is deep; but in most cases at the distance of three or four feet we reach a hard bottom of clay and gravel.

I began the improvement of it by making a drain of three feet deep and about two feet wide in the centre for the whole length of the meadow to a place, where by cutting through a very rocky piece of ground, which formed a kind of embankment, there was a sufficient descent to take off the water. Then by forming drains of less dimensions round the out side of the meadow at the foot of the ascending ground, I cut off effectually all the springs, which flowed into it from the neighbouring hills; and by connecting the side drains with the main drain by lateral branches have turned all the water into the centre drain, and thus led it off from the field. The drains are covered excepting the outlet to the main drain. A channel of about four or six inches square was laid on the bottom of each ditch with such stones as we could find in the vicinity; they were then covered with the flattest or most suitable stones, which presented themselves; a quantity of small stones was then thrown in promiscuously; a layer of thatch or straw placed on these, and enough dirt returned to fill it up; and the whole levelled and smoothed off. The top stones of the drain were always kept so far below the surface as not to interfere with the plough.

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My meadow is completely drained. It was ploughed in the spring, and promises to yield a good crop of potatoes.* No water now stands upon it and none remains after rains longer than upon any other part of the farm, which is as level. I design to plant it one year more, when I think all the sods and hillocks will be completely crumbled and then lay it down in grass, confident of success from the result of a similar experiment on a piece of land about one fourth of an acre, which from being impassable, worthless, and filled with skunk cabbage and other noxious weeds, is now the best piece of grass land on the place; and though drained and laid down after one summer's fallow with manure and with sowing only a few turnips, with hoeings sufficient to break the sods to pieces and afterwards sown with grass seed and carefully rolled, has this year yielded two abundant crops of excellent hay.

I have applied sea sand to wet land, ploughing it in, but perhaps from using it too copiously thought that the land was impoverished by it. I have seen meadows made hard by covering them with gravel; but besides the expense deem it of doubtful expediency to cover land with a perfectly barren and inert substance. My own experiments in this way have not been satisfactory; and as the late intelligent President of the Essex Agricultural Society remarks,† "if meadows admit of being thoroughly drained by ditching, I would never carry on gravel or sand, absolutely barren substances." In most cases of meadows reclaimed by gravel the produce has been of a very ordinary quality; and filled with plants accustomed to wet and soaked lands, which afford an herbage neither savory nor nutrious to cattle.

The drains formed as above, where stones are near and abundant are not expensive; and if well made will stand, according to the best writers, for half a century. An intelligent English farmer recommends that whenever made, they should be laid down on a plan of the farm, so that if occasion should require they may be found and repaired without difficulty. They should be sufficiently numerous and capacious to take off all the water that is likely to be led into them without much delay; otherwise as it is sometimes termed they become blown, that is, the water forces itself up on the top of the ground. I have several acres of wet land, of little

* The crop was planted in very wide rows and measured about one hundred and fifty bushels—November, 1829.

† Col. Pickering.

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value before, which have been laid dry in this way, and are now under easy cultivation, bearing good crops of grass, potatoes, and Indian Corn.

I am, Gentlemen, very respectfully, your obedient servant,

HENRY COLMAN.

September 30, 1829.

JESSE PUTNAM'S STATEMENT.

To the Trustees of the Essex Agricultural Society.

GENTLEMEN—Having observed for several years past, that premiums were offered by your Society for the improvement of wet meadow lands;—and not having learned that any persons have presented claims for these premiums, in years past, I am induced to state for your consideration, the manner in which I have dealt with my meadows, as I have had opportunity. It will be a source of satisfaction to me, if my mode of management shall be found to meet your approbation. It was not done with a view to obtaining any other premium, than that which I expected to find, in the improved produce of the land, both in quantity and quality;—and in this I have not been disappointed.

My first experiment was made on about three-fourths of an acre of land in 1807 and 8. It was a miry, wet meadow; spongy, and impossible to be carted on, except when frozen. It yielded very little but polypod, and very little of that. We considered what grew on it, as of scarcely any value. I commenced by carting about two hundred loads of stubble stones, and spreading the same upon the surface of the meadow, when it was frozen. I then ditched it, with ditches about three feet wide, and between two and three rods apart, and spread the materials that were taken from the same over the stones. I then carried on gravel and loam sufficient to cover the stones, and make the surface smooth. Where there were no stones, the gravel was carried on from four to six inches in depth. After this I put on a coating of soil and compost manure, about one inch thick, mixed together. Sowed it down with herdsgrass, red top, and clover, with oats. The first year it yielded a fair crop of oats, that were mowed for fodder. The second year, it produced at least two tons to the acre; and has continued to produce as much as that, each year since. In addition to the first

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crop, I have every year mowed a second crop upon it. I have calculated to put the same value of compost manure upon it in each year, as I obtained second crop from it in the preceeding year. I have spread upon it, from six to eight loads of compost manure annually—but these would not average to contain more than one chord of real manure annually. The second crop has paid for all I have done to the land since it was first prepared. I have sowed grass seed upon it about every third year.

In 1811, I made another experiment on about half an acre of meadow, by carrying coarse rocky gravel upon it. The gravel was laid upon it from six to twelve inches thick. Experience has proved that too much gravel was carried on. It has not answered my expectations.

In 1821 and 2, I made another experiment on about three-fourths of an acre of wet, miry meadow, situate to the east of my house, near the road. I commenced here by turning the soil upside down, and throwing it into ridges between two and three rods wide—the materials taken from the ditches were thrown upon these ridges. The meadow was flowed in the autumn—and upon the ice in the winter, I carried on sand and spread it upon the ridges about four inches deep. In the spring I planted these ridges with potatoes, dunged with coarse manure, and obtained about a middling crop. The next winter I carried on a coating of soil and compost manure—and in the spring sowed it down with oats, herds-grass, red top and clover. The crops since have been the largest grass I have had upon the farm, and of a quality that commanded as good a price as any that I had to sell. I have each year mowed a good second crop also. I have put a dressing of compost manure on it each year.

In 1827, I reclaimed about half an acre of meadow, at the lower end of my field in the same way

In 1828 and 1829, I have also brought in about three-fourths of an acre more of my meadow land in the same way.

This kind of land requires manuring and dressing each year—and the second crop it produces will usually pay for this dressing.

I have found sand the best material to carry upon meadows. The ditches should be kept clear, that the water may run off—otherwise the meadow grass will return. It will not do to carry loam upon meadows—if you do, it will all become meadow again, in a few years.

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The expense of doing what I have done to my meadows, would have cost me one hundred dollars an acre if I had have hired it done, and had to pay for the labour. But I have done it, at such times as I had leisure for myworkmen and teams; and when I could not have earned more than fifty dollars, in any other way. I therefore estimate the expense to me about fifty dollars an acre. And I think the net income of this land has averaged at least twelve dollars an acre annually. I have found my labour as well applied here, as in any part of my farm.

JESSE PUTNAM.

Danvers, December 28, 1829.

Essex, ss. Dec. 28, 1829.—Subscribed and sworn to before me,
John W. Proctor, *Justice of the Peace.*

JACOB OSGOOD'S STATEMENT.

To the Committee of the Essex Agricultural Society on Farms.
Gentlemen—

I have on my farm about two acres of improved meadow land, which at the time I began to cultivate, it was merely a bog meadow, so spungy and soft, that one could not walk over it but with the greatest caution, without sinking in the mire. The produce was of little or no value. I commenced about fifty years since my improvement of this meadow land by draining it; after which I carted on sand about one inch and a half in depth, and then put a small quantity of manure upon it, and sowed in redtop, herdsgrass and some clover seed, and so continued to do until it was well covered with English grass. The manure I used was sand, which had lain one year in a yard, where I had some dry cattle. As I have no cellar under my barn, I put sand where I throw out my winter dung. My sheep house and yard are well supplied with sand—all of which I annually cart on to my cultivated meadow land. The labour of improving this land has been performed, at a season of the year when other labour on the farm is not pressing, to wit, in the winter, after the meadow is frozen enough for carting over, and before the earth is covered with snow. The expence of the cultivation cannot therefore be accurately estimated. But after two or three of the first years, the annual improvement of the pro-

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duce amply repaid the annual labour. I consider it now as profitable grass land as any on the farm. I have pursued this course, for the time mentioned, and the produce of this meadow land for the three last years, has been more profitable than in any of the preceeding years, although the quality of the grass has rather depreciated, yet the quantity has increased in a greater proportion, and it is now good stock hay.

Yours respectfully,

JACOB OSGOOD.

Andover, November 27th, 1829.

III. ON PLOUGHING—DOUBLE TEAMS.

The Committee upon Ploughing with two yoke of Oxen Report:—

That seven teams were entered for premiums—and performed the work in the following manner;—

No. 1.	Enos Kendrick, of Amesbury,	30	furrows in	58 min.
" 2.	Moses Kimball, of Boxford,	28	"	71
" 3.	John Bricket, jr. of Haverhill,	23	"	50
" 4.	Richard Jaques, of Newbury,	28	"	64
" 5.	Perley Tapley, of Danvers,	28	"	64
" 6.	Isaac Osgood, Esq. of Andover,	28	"	61
" 7.	Robert Stewart, of Haverhill,	24	"	64

The Committee award premiums as follows:—

To	Enos Kendrick, the first premium, -	16 dollars.
"	Perley Tapley, the second premium, -	12 "
"	John Bricket, jr. third premium, -	8 "

The whole work, by all the teams, was performed so well, that the Committee had difficulty in deciding among the claimants, and therefore take the liberty to recommend that a gratuity be awarded to Richard Jaques, Isaac Osgood, Esq. and Robert Stewart, of four dollars each, instead of awarding the fourth premium to any one of them.

The team of three horses, by Rufus Slocum, of Haverhill, performed its work with skill and dispatch—to wit, in 45 minutes; and

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as well as the average of the Ox-teams; but as no premium was offered for horse teams, the Committee recommend a gratuity of three dollars to be given to Mr. Slocum.

All which is submitted.

Haverhill, Oct. 1, 1829. I. TUCKER, *Chairman.*

ON PLOUGHING—SINGLE TEAMS.

The Committee on Ploughing with Single Teams, REPORT:—

That four teams were entered for ploughing—That the lots were drawn as follows:—

Lot No. 1. Jonathan J. Porter, of Boxford, ploughed one fourth of an acre in 54 minutes, with 38 furrows.

Lot No. 2. Henry Martin, of Salem, ploughed one fourth of an acre in about 54 minutes, with 46 furrows.

Lot No. 3. Daniel Putnam, of Danvers, ploughed one fourth of an acre in 58 minutes, with 42 furrows.

Lot No. 4. Perley Tapley, of Danvers, ploughed one fourth of an acre in 54¼ minutes, with 47 furrows.

The ploughing was, in the opinion of the Committee, performed in a more workmanlike manner and with less labour than in any former year. The ploughs used by Tapley and Putnam laid the furrow slice the closest, and a majority of the committee are of opinion that this ploughing is preferable in common cases.

The plough used by Henry Martin went apparently with much ease, and performed the work well; but in the opinion of the committee is better adapted to seed sowing, than to ploughing sward ground.

The plough used by Jonathan J. Porter was of bad construction, for any use, there not being sufficient depth under the beam to enable it to keep itself clear. It was however drawn by a superior pair of oxen and held by an experienced driver, and with a plough of good construction he would probably have done work equal to either team.

Taking every thing into account, the Committee have awarded the

1st premium of 12 dollars, to Perley Tapley, of Danvers.
2d premium of 9 dollars, to Daniel Putnam, of Danvers.
3d premium of 6 dollars, to Henry Martin, of Salem.
4th premium of 3 dollars, to Jonathan J. Porter, of Boxford.

All which is respectfully submitted.

DANIEL ADAMS, 3d, *Per order.*

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ON WORKING OXEN, AND BEST PLOUGH.

The Committee appointed to award the premiums offered for the best Plough, and the best working Oxen, consisting of Jesse Putnam, Moses Wingate, Daniel Fuller and Stephen Abbot, have attended to that duty and REPORT :—

That they examined the cattle as they worked upon the plough, and also with a loaded waggon up and down hill, and in backing such loads. Many of the cattle were of good size and well trained. The Committee were unanimous in the opinion that the premiums for the best working oxen be awarded to Perley Tapley, of Danvers, for his brindle oxen six years old.

The whole number of ploughs used in the field was twelve, but eight of which were entered for premium.

The construction of these ploughs was various, some of them having cast iron mould boards, with cast iron chips, and wrought iron shares—some with cast iron chips, mould boards, and shares, and some the iron work all wrought.

The Committee were divided in the opinion as to the utility of having the chips of cast iron. The ploughs used by Mr. Putnam and Mr. Tapley, of Danvers, were considered the best in the field. These ploughs were made by Messrs. Pike and Spaulding, of Danvers. The Committee, after much deliberation as to which should have the preference, have agreed that the premiums be awarded to Mr Daniel Putnam, for his plough, with cast iron mould board, wooden chips, plated and wrought iron share.

The ploughs that made the best work, were furnished with a wheel under the beam, and a revolving cutter. These additions the Committee consider essential improvements in the construction of the *breaking up plough*.

Respectfully submitted.

JESSE PUTNAM, *Per order.*

Haverhill, Oct. 1, 1829.

IV. ON LIVE STOCK.

THE Committee for awarding the premiums on the Animals exhibited this day at the Cattle Show in Haverhill, REPORT as follows:

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Bulls.

They award the premium for the best bull, two years old, to Samuel Pecker, of Haverhill, - - - - - 15 dollars.

The premium for the second best bull, two years old, to James H. Duncan, of Haverhill, - - - - - 10 dollars.

To Billy Emerson, of Topsfield, for a fine bull calf, exhibited by him, the Committee recommend a gratuity of - 5 dollars.

Two bulls, three years old, one owned by Samuel Pecker, the other by B. Walker—were offered to the view of the Committee. They were large and well formed animals, but considering their age, the committee did not think either of them entitled to a premium.

There were also two fine bulls, seventeen months old—one owned by Samuel Bailey, the other by Noah J. Noyes.

Milch Cows.

The premium for the best milch cow, the Committee award to Jeremiah Stickney, of Rowley, - - - - - 15 dollars.

The premium for the second best, to John E. Goss, of Bradford, - - - - - - - - - 10 dollars.

For the third best, to John Torrey, of Newbury, 5 dollars.

Mr. Stickney's cow was remarkable for the quantity and quality of her milk, and the large size of her calves. Kept only on hay last winter, she gave milk to the time of her calving in April, and her calf then weighed 93 pounds; at six weeks old, 190 pounds; and at five months and three days old, 424 pounds. The average quantity of her milk in June, July and September was upwards of 16 quarts per day. For a more particular account of this cow, which must be interesting to all farmers concerned in the dairy, the Committee would refer to the statement of Mr. Stickney which accompanies this report.

The Cow of Mr. Goss, during the present season, from April 16th, to September 30th, gave 375 gallons of milk, weighing 3902 pounds. Four gallons of the milk made 1 pound 14 ounces of butter.

Heifers.

The Committee award the premium for the best heifer, to James Ayer, of Haverhill, - - - - - 10 dollars.

For the second best, to Rev. Abiel Abbot, of Andover, 5 dollars.

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Mr. Ayer's heifer was two years old in April last; calved May 6th, and gave during June and July, 11 quarts of milk per day; and at this time about 6½ quarts. Her only food was what she obtained from a very high and dry pasture.

The heifer of Mr. Abbot was three years old—her milk of a good quality, about 9 quarts per day during the best part of the season, and held out much better than that of his other cows, especially in the winter.

Two very fine heifers, belonging to William P. Endicott, of Danvers, were exhibited, but not for a premium; one of them was 15 and the other 16 months old.

Two good heifers were also offered to the view of the Committee by Mr. John Torrey.

STEERS.

For the best pair of two year old steers, the Committee award the premium to James Ayer, of Haverhill, - - 5 dollars.

For the best pair of three year old steers, a premium of 10 dollars was offered by the Trustees. The Committee after some hesitation recommend, that it be divided between two of the candidates, as follows,

To David Gray, of Andover, for his pair of three year old steers, - - - - - - - - - - 5 dollars.

To Jesse Putnam, of Danvers, for his pair of three year old steers, - - - - - - - - - - 5 dollars.

To William P. Endicott, of Danvers, for a fine pair of yearling steers, sired by Admiral, the Committee recommend a gratuity of - - - - - - - - - - - 5 dollars.

A pair of twin steers, 5 months old, belonging to Mr. Endicott, were at the exhibition, and were very beautiful and promising animals.

A large and well formed pair of four year old steers, belonging to Rev. Abiel Abbot, and another similar pair, to Moses Clark, were exhibited, but not for a premium.

A remarkably large ox, of a fine form, eight years old, and altogether a noble looking animal, raised by Moses Newell, of West Newbury, was exhibited by him. The weight of the ox was 2223 pounds. For this ox the Committee recommend to Mr. Newell a gratuity of - - - - - - - - - - 7 dollars.

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To Moses Clark for a pair of yearling steers, deemed very good, the Committee recommend a gratuity of - - 3 dollars.

The number of cattle at the Show, was not so great as in some former years, but they were perhaps not inferior in quality. The milch cows were considered very good. The Committee regretted hat so few cows and oxen were seen at the exhibition, except the oxen at the ploughing match, where the teams were more numerous than usual. It is true that the farmers in Essex do not raise so much of their own stock as those in other agricultural counties. But Essex can and ought to excel in the products of the dairy, in the number and excellence of its milch cows, and in its working oxen. No articles, which the farmer brings to market, command a more ready sale than butter and cheese, especially the former. None have better sustained their prices during an almost universal depression of agricultural produce, as well as of other commodities.

In Worcester, and in some other counties, great numbers of the best working oxen are brought together on these anniversaries. If the patriotic farmers of Essex would imitate this example, it would add much to the interest, as well as to the utility of these exhibitions. Few counties possess greater advantages for raising good oxen, or a soil on which they can be more profitably employed, or can furnish a more ready sale for them, whether in the condition of working oxen or fat ones.

The Committee are of opinion, that there are many animals in this county equal if not superior to some which obtained the premium. If the owners choose to keep them at home, and suffer the premium to be given to their neighbours, for inferior animals, they have nobody but themselves to blame.

FREDERICK HOWES, *Chairman.*

Haverhill, Oct. 1, 1829.

JEREMIAH STICKNEY'S STATEMENT.

The cow offered, by the subscriber, was purchased by him in the spring of 1828. She was bred in West-Newbury, and was eight years old last spring, as appears by an accompanying certificate. This Cow was considered by her former owner, as very remarkable for the calves she brought, and for the quantity and quality of the milk she gave. She gave, kept only on hay, milk up to the time of

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her calving, last spring, which was on the 25th day April, when she brought a cow calf, whose weight at its birth was 93 pounds. At the age of six weeks, its weight was 190 pounds. The weight of the calf at the age of five months and three days was 424 pounds. The calf has taken half the milk of the cow—has fed on grass, and has eaten some provender (shorts and meal.) The calf was sired by a Bull of the Sandwich Breed.

The keeping of the cow, the past season, has been in a common pasture, with a small quantity of shorts and meal daily. The calf has been taken from the cow entirely, several days, at different times, for the purpose of ascertaining the quantity of milk she would give, and the following is the result :—

On the 2d day of June, 18 qts. beer measure, weighing 46 lbs.
" " 15th, " " " 18 qts. " " " 46 "
" " 26th, " " July, 14 qts. " " " 36 "
" " 6th, " " Sept. 15½ qts. " " " 39½ "

As above stated, the calf has taken half the milk from the cow, and my family, which has consisted the past season of five grown persons and six children, have used the milk freely, as I have kept no other cow.

The following is the quantity of Butter made from her milk, after supplying her calf and my family, as above, viz :—From April 25th to September 26th, 1829, being 22 weeks, - 88 pounds.
In the month of June, were made - - 25½ pounds.
The calf, I exhibit with the cow, on account of its size and beauty.

JEREMIAH STICKNEY.

Rowley, Sept. 29, 1829.

I, the subscriber, do hereby certify, that I raised a heifer calf and kept her till she was four years old, and then sold her to Mr. Charles Tidds, of Rowley; she was of good breed, very good for milk, and brought very fine calves; one calf at four weeks old the quarters weighed 101 pounds; she had a calf at two years old.

JACOB EMERY.

West-Newbury, Sept. 30, 1829.

I hereby certify, that I purchased of Mr. Jacob Emery, of West-Newbury, a large red white faced cow, four years old, in the spring of 1825. I kept her three years, and she is now owned by Mr.

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Jeremiah Stickney, of Rowley. She produced, while I owned her, remarkably large and fine calves, one of which weighed at its birth ninety-eight pounds; I kept one other cow at the same time, which was as good as cows will average, but which did not give more than half the quantity of milk and of a quality much inferior, afforded by the cow above described. The cows were both kept alike and on nothing more than common keeping. The milk of this cow was of a very rich quality.

SAMUEL C. TIDDS.

Rowley, Sept. 22, 1829.

V. EXPERIMENTS ON RAISING POTATOES.

The Committee appointed to award Premiums on Potatoes, consisting of Paul Kent, Nathaniel Felton, jr. and David Gray, have attended to that duty and Report:—

That claims were entered for the premiums offered, for the best conducted experiment in the raising of potatoes, &c.

By Jesse Putnam, of Danvers;
Daniel Burnham, of Newburyport;
Thomas Payson, of Rowley.

The committee have awarded the first premium on the subject to Jesse Putnam, - - - - - - - 15 dollars.

The second premium to Daniel Burnham, - 10 dollars.

The committee were well pleased with the accounts of these experiments, and would recommend that the same be published in connection with the Report.

The committee have awarded also the first premium of ten dollars to Mr. Daniel Burnham, for his experiment in raising potatoes from the seed of the green balls, &c.

Submitted by

PAUL KENT, *Per Order.*

November, 1829.

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JESSE PUTNAM'S STATEMENT.

To the Committee of the Essex Agricultural Society on Experiments in the raising of Potatoes.

GENTLEMEN—I submit to your consideration the following account of a lot of land planted with several kinds of Potatoes in the season of 1829. The parcel of ground contained about one hundred square rods, being eleven rods in length and nine rods wide. The soil is a dark loam, naturally rocky, but now chiefly cleared of stones; and is of good quality. It was situate on the eastern side of Ingersoll's Hill, in Danvers, near the Newburyport Turnpike. The land was planted in 1828 with potatoes, and lightly manured, with manure made principally from meadow hay. In the spring of 1829, the land was twice ploughed—the first time coarse, and the second time fine—the ploughing was on an average about six inches deep. On the 23d day of May the land was planted, the rows being across the lot, nine rods long. The manure was of a coarse quality, taken from the barn cellar, made from the litter and droppings of the cattle—three fourths of the bulk appeared to be meadow hay—it was placed in the hills, and covered with the seed. The rows were furrowed four feet apart, and there were planted sixty-six hills in a row, leaving the hills about twenty-seven inches apart, on an average. Three cords of manure was put upon the land the present season. Four different kinds of seed were planted:—

1. The long red, or River La Plate Potatoes.
2. The speckled blues, a kind that has been well approved by several of our farmers, for a number of years.
3. The Richardson Whites, with small specks of blue upon them.
4. A white potatoe raised from the seed of the green Balls by myself.

Each kind were planted in three or four different ways. The manner of the planting and the produce is thus stated:—

1. *Long Red Potatoes.*

			bushels
No.	1.	2 rows—one large potatoe in a hill, yielded -	10½
	2.	2 rows—one large potatoe, cut in four pieces, placed in a hill, cut side up, yielded -	11¾
	3.	2 rows—one large potatoe, cut in four pieces, placed in a hill, cut side down, yielded -	11½

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		Bushels.
	Long Red Potatoes—amount brought up -	33½
No. 4.	2 rows—middling size potatoes, two in a hill, yielded - - - - - - - -	11½
16.	2 rows—one large potatoe in a hill, yielded -	10½
17.	2 rows—only 43 hills long, one large potatoe in a hill, yielded - - - - - - -	7½
18.	2 rows—same number of hills—middling size potatoes, three in a hill, yielded - - -	9½
22.	2 rows—same number of hills—middling size potatoes, two in a hill, yielded - - -	8½
23.	2 rows—same number of hills, only the stem end used, two pieces in a hill, yielded - -	6½
24.	2 rows—same number of hills—the seed end used, about one third part of the potatoe, two pieces in a hill, yielded - - - - -	8½
	Twenty Rows of this kind yielded - bushels	96½

2. Speckled Blues.

No. 5.	2 rows—one large potatoe in a hill, yielded -	8¾
6.	2 rows—one large potatoe, cut in four pieces, planted in the hill, yielded - - -	9½
7.	2 rows—two potatoes in a hill, equal to one large one, yielded - - - - - - -	9½
8.	2 rows—one large potatoe in a hill, under the dung, yielded - - - - - - -	8½
9.	2 rows—one potatoe, cut in four pieces, under the dung, yielded - - - - - - -	9½
10.	2 rows—middling size, two in a hill, yielded -	8½
	Twelve rows of this kind, yielded - bushels	54½

3. Richardson Whites.

No. 11.	2 rows—one large potatoe, with prongs, in a hill, and only one or two prongy potatoes raised from the whole number of hills, yielded - -	6½
12.	2 rows—one large smooth potatoe in a hill, yielded	6¾
13.	2 rows—one large potatoe, cut in four pieces, yielded - - - - - - - -	6¾

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		Bushels
	Richardson Whites—amount brought over	20½
No. 14.	2 rows—middling size, two in a hill, yielded -	6
15.	2 rows—middling size, three in a hill, yielded -	7½
	Ten rows of this kind yielded - bushels	33½

4. *White Potatoes, raised from Seed of Green Balls.*

No. 19.	1 row—66 hills, with the eyes of one large potatoe only, planted in each hill, yielded - -	2½
20.	1 row—66 hills, one large potatoe in a hill, yielded	3½
21.	2 rows—132 hills, one large potatoe cut in four pieces, planted in each hill, yielded - -	6½
	Four rows of this kind yielded - bushels	12½
	Whole amount - 197½ bushels.	

With regard to placing the potatoes *upon* or *under* the dung, I could perceive no difference in the yield. I was disappointed in finding that the cut potatoes, and middling sized potatoes, yielded better than the large potatoes that were planted whole. I could discover that the produce of the large potatoes, that were planted whole, were generally of a larger size than the others, but not so numerous, or near so valuable for the table. The pieces of the potatoes that were cut, were placed in the hills about eight inches apart. The middling sized potatoes were placed about the same distance apart. There was nearly the same quantity of Potatoes, in each kind, planted in a row. I am of the opinion, that it would have been well to have spread a part of my manure upon the land, if it had been fine enough for that purpose. And think it would have been well to have put one third part more seed on the land. I used between fourteen and fifteen bushels of seed in planting.

JESSE PUTNAM.

Danvers, Dec. 1, 1829.

Essex, ss. Dec. 28, 1829. Then Jesse Putnam made oath, that the foregoing statement by him subscribed, is to the best of his knowledge and belief, correct and true, before me,

John W. Proctor, *Justice of the Peace.*

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DANIEL BURNHAM'S STATEMENT.

To the Committee of the Essex Agricultural Society, on Experiments in the raising of Pototoes.

GENTLEMEN—I offer for your inspection twelve sorts of Potatoes, the second season from the seed of the balls. As I have found no cause for amending my process of cultivation, and as I have repeated it, and you have it on record, I thought it useless to recapitulate it. No. 1, is excellent, its fair product has been a bushel, to seven hills. No. 2 is at full maturity 25th July—its quality is quite good, and for an early potatoe, is an abundant bearer.—Nos. 3, 4 and 5 are ripe from the 10th to the 25th of August—their quality is good—in no previous year have I succeeded so well in obtaining early sorts.— No. 6, is very delicate, but not prolific. No. 7 is good, and a middling bearer. No. 8 is a good bearer, but rather inferior in quality. Nos. 9, 10, 11 and 12, I should not introduce to your notice, but to comply with the requisition—I have no value for them.

Last year I gave it as my opinion, from a number of years experience, that it was useless to reserve the product of the first season, unless it bore some distinct mark of promise—this year I am fully confirmed in that opinion—I should not put by for future planting the fruit of a plant, unless the largest was at least, as large as a pigeon's egg, and not then, if the small ones were numerous. I have invariably found, that when the small ones were many, that I could not, by repeated plantings, draw them from this propensity. As there has been complaint that the seed of the balls, does not readily vegetate, perhaps it may be of some service to say that it is quite necessary, that the ground in which it is sown, should be very well pulverized—if it is not, there is danger, (the seed is so small,) that it will not come in contact with the ground, so as to vegetate. It is well to sow the seed in shoal drills, and when covered to press or roll it down. I will likewise say that this season I sowed the seed of 1823, and it appeared to take as well as the seed of the last year. I observed to the Committee the last Autumn, that with me, the fruit of the plants, inclined to take the shape, and the shade of those from which the balls were taken—I find that it does the same this season, and as the round white potatoe is the most popular, is it not best to seek the balls from the largest and best, of this shape and colour.

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Will you allow me, gentlemen, respectfully, to express my surprize, that the gentlemen farmers belonging to the Society, are reconciled to the Trustees offering a premium, for these experiments, and yet that so few of them, are inclined to execute them. Although they will find, that they require care and thought, yet they would find them easy, and very interesting, and would they not, in a few years be richly rewarded, by having the community, and themselves, well supplied with a large variety of genuine seed, assimilated to the climate, and the necessity of offering premiums precluded.

Gentlemen—I further present to your notice, a small field of potatoes, consisting of 1798 hills. It is a dry declivity, of clayey loam—this is the third season it has been cultivated with potatoes. The middle of May four cords of common barn manure was ploughed into it—It was then harrowed, and holed four feet each way, from the centre of the hills—The holes were made very broad, flat, and choal, that the seed might have an equal depth and space. The seed was cut lengthways, and two potatoes put in each hill, in four pieces, one foot apart—in placing the seed, great care was taken, that the cutsides should be uppermost, as in a previous dry year, by not attending to this circumstance, those that were put, cut side down, did not rise from the ground until near July. My design, was not the most abundant, but the most valuable crop—had it have been the former, I should have chosen the long red, or River Plate potatoe, or some other prolific bearer. I sought for those of the most superior quality, that I knew. I therefore took Nos. 1 and 2, which are four seasons from the seed of the balls, and for which your Society awarded a premium in 1827—their quality is very good, one of them, No. 1, is very superior. For the third, I chose the black potatoe, the excellences of which are, that it is a good bearer, of good quality, and retains its value through the Summer into September, better than any kind I know—it is particularly valuable for long voyages. For the fourth I took the chenango, or as it is called in Pensylvania, from whence it came, the Mercer potatoe, and where it commands near double the price, of those commonly received from the North. The form of placing the seed brought the plants in the different rows within three feet of each other. Four or five of the tall Marrowfat pea, were planted directly in the centre of each hill, from which fifteen bushels of green ones

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were produced, which brought in the market 80 cents the bushel, except two or three of the last bushels, which commanded only 67 cents. I believe that more than double the common time was spent in planting—in doing which, the hoeing was so far executed that little was afterwards done, except to move the surface of the ground and keep it clear of weeds. Great caution was taken, not to raise a high hill, and to leave a bason in each, to collect and retain the rains. The promise of the field was very great, until it was checked by severe drought—soon after the rain fell, the rust seized the potatoes, and another drought soon following, urged those on the higher ground, to full and premature maturity. I have no doubt, but you will have before you, a much larger quantity from a moist field, and more extended experiments; but I have no tremors from the thought, that I shall be exceeded in the cultivation and the quality of the crop. The last year, when common potatoes were selling from 25 to 30 cents, the black, and chenango readily commanded from 45 to 50 cents. Those from the seed of the balls, I had none to part with then, nor shall I have this season, any to dispose of except for seed entirely. I have an unhesitating belief, that these sorts combine as great a degree of excellence, as can be found in this region in the same number of sorts. If this may be thought an expression too emphatic, I shall be gratified, if the movements of the day will admit of their being rightly cooked, that it may be done. If it may not be thought too stern a pressure for favor, I will add my full conviction, and that of better judges than myself, that the form of planting gave at least a quarter part more crop, than the common loose method, and that the crop is from a quarter to a third less, from the drought and rust, that the field had to encounter. It has been often repeated, that small potatoes were as prolific for seed, as the larger size. Last Autumn when I took Nos. 1 and 2 from the ground, their quality was such, as induced me to select for seed all the fair ones as large as a pigeon's egg—they were planted in distinct rows, in the midst of the others, and the result is, that the crop from them is a sixth part less, and the small ones much more numerous than from the large seed. If I shall be present at your meeting, I shall be pleased, to be closely interrogated on both my experiments.

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The produce of the several kinds were as follows:

No. 1, -	4	bushels	planted,	product	57	bushels—	hills	638
No. 2, -	2	"	"	"	25½	"	"	261
Black Potatoe,	4	"	"	"	42	"	"	529
Chenango, or Mercer Potatoe	2½	"	"	"	22½	"	"	380
	12½				147			1798

I am, gentlemen, with respect, your ob't serv't,

DANIEL BURNHAM.

Newburyport, Sept. 29, 1829.

THOMAS PAYSON'S STATEMENT.

This may certify, that the subscriber planted, last May, 105 rods of ground with potatoes; the land was a sandy loam, which had been planted one year and sowed the next, in succession for upwards of one hundred years, as my ancestors have stated.

In April, I turned out the corn roots with a plough, in May, I spread about two cords of manure on the same, which was taken from my hog yard—ploughed it 16th—Planted it from the 20th to the 26th of May, with eleven bushels of potatoes, as follows; viz:—

Planted one row, 80 hills, one large red potatoe in a hill, weight 21¼ pounds, produced 370 pounds, equal to about 17½ from one.

One row, two pieces in a hill from large potatoes, weight 21¼ pounds, produced 428 pounds, equal to 19½ from one.

One row, three pieces in a hill, weight 20 pounds, produced 424 pounds, equal to 21 from one.

Planted in one row the most prongy red potatoes I could select, when gathered proved as fair and as sizeable as those in the adjoining rows.

Cut out one pound of eyes, planted 56 hills, 6 eyes in a hill, produced 120 pounds.

The above where red potatoes, imported from Belfast, Maine, last spring.

Planted one row, 80 hills, with large white potatoes, one in a hill, weight 20¾, produced 305 pounds, equal to 14½ from one.

One row, two pieces or halves in a hill, weight 20½, produced 330 pounds, equal to 16 from one.

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One row, three pieces in a hill, weight 19¾ produced 288 pounds, equal to 14½ from one.

One row, four pieces in a hill, weight 23½ pounds, produced 327 pounds, equal to 14 from one.

Planted several more rows promiscuously with large, small and cut potatoes—they produced similar to the two last mentioned rows. The seed was imported as above stated.

Planted one bushel of large white potatoes of my own raising, weight 63½ pounds, planted 206 hills, produced 13 bushels.

One bushel of very small potatoes, weight 62½, planted 420 hills, produced 26 bushels.

The other part of the field was planted with seed taken from the pile, without selection, the result was similar to that of the last mentioned bushel.

Planted eleven ounces of potatoes, produced from the seed of the potatoe balls in 1828, on forty-three hundredths of one square rod of land, when gathered weighed 75 pounds, equal to 91 bushels from one bushel of seed, allowing 63 pounds to the bushel.

THOMAS PAYSON.

Rowley, Sept. 30, 1829.

VI. DAIRY.

The Committee of the Essex Agricultural Society on the Dairy, ask leave to Report :—

That four parcels of butter were presented for their examination; only two of which came within the notice of the Committee as subjects for premium; the others not being conformable to the conditions prescribed by the Trustees, which require the whole produce of at least four cows for the 20th of May to the 30th Sept. to be exactly reported, and samples of at least twenty pounds to be exhibited at the Show.

The Committee are unanimous in the opinion, that Jesse Curtis, of Marblehead, is entitled to the Society's first premium of twenty

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dollars, for the best produce of butter in proportion to the number of cows producing it, having made, from seven cows, from the 20th May to the 30th Sept. 1829, 796 lbs. 1 oz. and from the 27th March to the 20th May, 120 lbs. making a total during the present season of 916 lbs. 1 oz. and the sale of his calves from the same cows having produced him the sum of $24 56. The Cows are all of our native stock and have had no extra feeding whatever. The butter was of a superior quality and made up in pound lumps with exemplary neatness.

The Committee agree to award the second premium of fifteen dollars to Edward Toppan, of Newbury, having produced from four cows from 20th May to 1st July and five cows from 1st July to 30th September, nearly 400 lbs. of butter and 90 lbs. of two meal cheese. The cows are all of native stock. Their winter feeding was of coarse and cheap fodder until March and then until turning to pasture with the best English hay. The summer feeding was a very ordinary pasture. The butter was of good quality, and neatly done up in small printed lumps.

Two other parcels of butter were presented:

One by Sally Bradley, of Haverhill, which was of very good quality.

One by Samuel Bailey of West Newbury, packed in a wooden firkin amounting to 21 lbs. from 3½ days milk of 8 cows, which was of a good quality, though considered by your committee as too strongly salted.

Your Committee award to Sally Bradley a gratuity of three dollars; and to Samuel Bailey a gratuity of two dollars; and this with a view to encourage a competition in this valuable article of agricultural produce, and of inducing the farmers of this County to send to the Show specimens of their best butter.

No samples of Cheese were offered either for exhibition or premium. Your committee regret this, as they know from personal observation, that samples might have been sent from some farms in the County, which would do honor to any dairy.

All which is respectfully submitted.

JOHN ADAMS, *Chairman of the Committee.*

Haverhill, Oct. 1, 1829.

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JESSE CURTIS'S STATEMENT.

To the Committee of the Essex Agricultural Society, on the Dairy.

GENTLEMEN—I subjoin hereto, agreeable to your requisitions, an account of the produce of my Dairy of seven cows during the present season, from the 27th March to 30th September, for your consideration. We confine ourselves to the making of butter, which is marketed once or twice a week in the town.

	lbs.	oz.
Butter made from 27th March 1829, to 14th May,	120	
May 21,	39	4
28,	41	
June 4,	46	
11,	54	6
18,	62	
25,	60	4
July 2,	54	
9,	47	2
16,	43	
23,	40	4
30,	37	
Aug. 6,	31	6
13,	30	4
20,	30	
27,	31	3
Sept. 3,	30	5
10,	33	9
17,	32	7
24,	19	8
28,	33	3
Total,	lbs. 916	1 oz.

The ages of my Cows are as follows :—

One is 9 years old last spring.
Two are 8 " "
One is 7 " "
One is 4 " "
Two are 3 " "

They are all of our native stock ; four of them were raised on the farm ; the other three in Middleton in this County. Their winter

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keeping until March was English Hay of a medium quality; after March they had the best quality of English Hay until the 20th May when they were turned to pasture. The pasturing is as good as is to be found in the vicinity. From 20th August to middle of September they received one feeding of green corn stalks per day, and from that time to the present they have had the fall feed in the mowing grounds.

From the same cows a family of six persons, two of whom are children, have used what new milk they required, and new milk has always been used to mix the bread for the family.

We have a good dairy cellar; but as we are without the advantage of ice, we pour water on the floor every day to render it cooler. The milk is kept above stairs until June; from June until October in the cellar. The milk stands before it is skimmed from four to six meals; generally six. We are careful to drain all the milk from the cream at the time it is skimmed; and the cream is hung in a well twenty-four hours before churning, which renders the butter much harder. For the greater part of the season we churn twice in a week; we use a common dash churn; and the butter usually comes in fifteen minutes.

The Committee require the amount of butter from the 20th of May to the 30th of September, which is exactly given above from seven cows. In April we had the milk of an eighth cow for one week in addition, when she was sold. It is to be added however, that one of the cows 3 years old did not come in until the 23d of April, and one 8 years old until the 13th of May. The calves of these two cows were permitted to suck until the milk was fit for use and were then raised upon skimmed milk. In addition to these two calves raised I have sold six calves from the eight cows. One without weighing, for six dollars, the other five weighing together 524 lbs. at four and a half cents per pound live weight $28 27

Total amount for six calves sold, - - -	28 27
Deduct for one calf sold, whose weight was not kept separate from the rest one sixth of the sum received, -	4 71
	$23 56

All which is respectfully submitted.

JESSE CURTIS.

Marblehead, Oct. 1, 1829.

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P. S. Three of these calves were sold to the butcher on the 3d of April; two on the 18th. Their ages averaged from three to four weeks, and until sold they had all the milk they could take.

Essex, ss. Oct. 1, 1829.—Subscribed and sworn to before
John W. Proctor, *Justice of the Peace.*

EDWARD TOPPAN'S JR'S STATEMENT.

Account of the Produce of the Dairy of Edward Toppan, jr. of Newburyport, from May 20th to Sept. 30th, 1829.

	lbs.	oz.
From May 20th to June 1st, four cows, - -	34	12
June 1st to July 1st, four cows, - - -	104	
July 1st to August 1st, five cows, - -	98	7
August 1st to September 1st, - - -	65	
September 1st to October 1st, - -	82	6
Total amount of butter churned, -	384	9

In the months of July and August made 91 lbs. of two meal cheese.

Age of my cows: one 15 years, one 11 years, one 6 years, two 3 years old, of native breed. Their winter feeding was salt hay and fresh meadow hay and corn fodder, until about the middle of March, from that time to the 20th May, English hay, pastured in common pasture.

Mode of making Butter. The milk is kept in earthern pans up stairs, except in the hottest weather, when it is set in the cellar and permitted to stand no longer than the milk remains sweet; cream kept in a stone pot; the churning performed early in the morning, in hot weather; the butter is washed in cold water; it is then worked over three or four times, or until the butter milk is entirely extracted, which is very important. The sample exhibited is the natural color.

EDWARD TOPPAN, JR.

Newburyport, Oct. 15, 1829.

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VII. ON MANUFACTURES.

The Committee on Domestic Manufactures have attended to the examination of the various articles exhibited for premiums, with an interest, which the importance of the subject would naturally excite. They have seen with much pleasure the gradual increase of this important part of domestic economy. They view the articles manufactured in families not merely as valuable in themselves, but as giving employment and encouraging industry and enterprize among those who without such employment would perhaps remain idle. Articles of domestic manufacture, whether designed for the various parts of clothing or intended for ornament, may be considered as much gained to the community, because they are produced without interrupting the ordinary pursuits of agriculture. Among such a variety of articles exhibited, and in some instances so much competition in the same, it may well be presumed that the committee have not in all cases come to a determination without difficulty. And although in instances they may have erred, yet they have endeavoured to exercise their best judgment.

The following is a list of most of the articles exhibited and premiums awarded by the Committee:—

28 yds. carpeting, by Sally B. Sawyer, Amesbury, 1st prem.	$5
A square list carpet 4 yds. by 3½, by Mrs. Fox, Newburyport, 2d premium	3
22½ yards of carpeting by Mrs. Frances Smiley, Haverhill.	
43¾ yds. stair carpeting, by Miss Sally Little, Newbury, prem.	3
27 yds. stair carpeting, by David Emery, Newbury.	
Grass bonnet, made from meadow grass, of very delicate manufacture, by Mrs. Rebecca Jenkins, Bradford, 1st premium	5
Palm leaf bonnet, by Phebe G. Jaques, 2d premium	3
Bonnet made of the down of milk weed, by Ann P Hale.	
Hearth rug, Mrs. Mary and Miss Sarah Smith, Danvers, 1st premium	5
Hearth rug, by Mrs. Alice Moody, Newbury, 2d premium	3
" " Ann Harris, Newbury.	
" " Abigail March.	
" " Mrs. Tafts.	
" " Miss Ann B. Sumner.	

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Hearth rug, by Abiah Spafford, Andover.
2 ps. " " Mrs. Mehitable Steel, Haverhill.
" " Miss Catharine Little, Newbury.
" " Handsome, painted on velvet by Miss Catharine Breckway, Newburyport.
" " Mrs. Mary Stickney.
" " Mrs. Fox, Newburyport.
20 yds. woollen cloth, by Richard T. Jaques, Newbury, 1st premium, - - - - - - - - - - $5
A piece of woollen plaid, by Abigail Morse, Bradford, 2d prem. 3
46 yds. flannel, by Wm. Sutton, Esq. of Danvers, 26 yds. " " " " } a gratuity 5
One pair of woollen hose, by Mary Cram, Haverhill.
One pair of three threaded linen hose, by the same.
These hose were excellent, but not of sufficient number to obtain a premium.
4 yds. table linen, by Miss Lucy Duston, Haverhill.
Wrought counterpane, by Miss Elizabeth W. Swan, Methuen, 1st premium - - - - - - - - - 4
Coverlet, by Meriam Emery, of West Newbury, 2d premium 2
" Jane Smith, Haverhill.
" Mehitable Carlton, Dracut.
" Miss Lucy Duston, Haverhill.
Bedquilt, by Ann Knight, Newbury.
3 lace veils, by Miss Mary W. Emerson, Haverhill.
1 " " Miss Betsey George, Haverhill.
1 " " Mira White, Methuen.
1 " " Mary B. Bradley.
1 " " Maria Caldwell, Newbury, 1st premium - 3
1 " " Elizabeth Marshall, West Newbury.
1 " " Mary Jane Bachelor, Haverhill, 2d premium 2
1 " " Elizabeth Barbour, Newburyport.
1 " " Mary W. Hale, Newbury.
1 " " Sarah Jane Brown, Newburyport.
Thread lace cap, by Maria C. Howe, aged 8 years, Haverhill, 1st premium - - - - - - - - - 3
Thread lace cap, by Harriet Maria Hammond, aged 8 years, 2d premium - - - - - - - - - 2
One pair blankets, manufactured by Mehitable Carlton, Dracut. The committee consider these as well deserving a premium had they been manufactured within the County.

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Silk watch chain, by Hannah Woodman, Haverhill, gratuity $1
Sampler, by Sarah E. Slocum, Haverhill, gratuity - - 1
Two beaver hats, by Nathan Webster, Haverhill.
Grecian pembroke work table, by Capt. Charles Short, Haverhill.
A mahogany looking glass frame, by the same.
A chaise of very elegant construction, by Brown and Davis, Haverhill.

The Committee were much pleased with, the exhibition of a quantity of Hosiery, manufactured by the Newburyport Hosiery Company. It is understood that this Society does not offer premiums for articles manufactured by Incorporated Companies. The Committee however, take great pleasure in recommending this Company to the favorable notice of the public.

The Company exhibited eighteen pair of Stockings, of nine different qualities, which the Committee consider equal if not superior to any Hosiery imported into the country.

The Committee would have been pleased had the culture of Silk, been enumerated among the articles for which premiums are awarded by the Society. They consider the culture of this article so important, that they would urge the members of the Society in the strongest terms, to awake to this important subject of national industry. It is well ascertained that every part of the United States, and particularly New-England, is well calculated for the growth of the Mulberry tree; and wherever this tree will grow there the silk worm may be reared. By a report of the late Secretary of the Treasury, it appears, that in 1825 silk of the value of more than ten millions of dollars was imported into the United States. It is stated on high authority as a fact, that five small towns in the State of Connecticut produced in one season, nearly two tons and a half of raw silk, and of the value of more than twenty thousand dollars. The town of Mansfield, in that State, containing a population of about 2500, produced 2430 lbs. of silk; while the staple of the South is cotton, rice and tobacco. May not our staple, ere long be silk; and is not the time at hand, when the culture of silk and its manufacture will be a portion of the wealth of New-England.

The Committee have been led to these remarks, from the circumstance that Mr. Enoch Boynton, of Newbury, has exhibited to the Committee a quantity of silk made by worms, reared by himself,

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prepared in a manner to form a favourable comparison with foreign silk. He has devoted much attention to the subject for several years, and is annually increasing in the quantity of silk produced, as his means enable him to extend his operations. Mr. Boynton also exhibited a machine for winding silk, which is understood to be ingenious and useful in the culture of this article. He also presented the statement, annexed to this Report.

The Committee recommend a gratuity to Mr. Boynton of $5

By order of the Committee,

E. MOSELEY, *Chairman.*

ENOCH BOYNTON'S STATEMENT.

An account of a specimen of Silk, the growth of the year 1829.

Silk-worm eggs began to hatch 22d and finished hatching 27th of May, 1829.

Silk-worms began to silk 21st of June and finished silking July 9th, 1829; there were but few idle or slow spinners, and but few unhealthy, all unhealthy worms were taken away and made no use of.

On branches of the oak tree, with the green leaves on, the worms made the best silk, with the least floss; and did congregate the most among the leaves and made the fewest double balls (double balls are those in which two silk worms work together.)

The eggs which were laid on green leaves by the silk miller, and scraped off before hatching, were the best: green oak leaves and green rushes are better than paper for the silk miller to lay her eggs on, for the eggs can be separated with ease and spread on paper, and stirred about two or three times a day, which will give every part of each egg a better chance for life.

Sixteen hundred knots of raw silk, weighing 8 ounces, were drawn from 1258 silk balls (cases or coccoons) which have 83 yards in length in each knot; the balls were taken without choosing as they came to hand.

Six silk-worm threads were drawn to make one raw silk thread, making 633 yards of silk-worm thread, to each ball of the 1258 silk balls which were made into half a pound of raw silk.

Newbury, Byfield, 1829. ENOCH BOYNTON.

N. B. The best way to take hold of any art or science is to earn the leading principles, and work them out in detail by practice.

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REPORT OF COMMITTEE OF THE LEGISLATURE—1829.

Report of a Committee of the Legislature, on the Culture of Silk.
JANUARY SESSION, 1829.

Your Committee are unanimous in the opinion, that it will be for the interest of this Commonwealth to extend the Grant to Agricultural Societies, made by an Act passed in the year of our Lord one thousand eight hundred and nineteen, for the further time of five years, for the encouragement of the objects named in said Act, and for the encouraging the culture of Silk. For several years past, the culture of Silk has excited a good deal of attention in different parts of our country, and great exertions have been made by patriotic individuals to bring this subject to the notice of the Agriculturalists in almost every State in the Union. The Congress of the United States, so late as the year one thousand eight hundred and twenty-five, directed its views towards this source of National wealth, and on motion of Mr. Miner, the Secretary of the Treasury was requested to prepare a manual, containing the best practical information, that could be collected on the growth and manufacture of Silk. The subject was taken up by the Secretary with the zeal and ability, which it demanded, and his letter to the Committee on Agriculture, together with the treatise of *De Huzzi*, on the culture of Silk in Germany, and on the plantation and management of Mulberry Trees, were published by order of Congress, and have been extensively circulated throughout the several States of the Union.

Your Committee refer to those works, as containing full information on this important subject.

As to the practicability of introducing the culture of Silk into this Commonwealth, your Committee are of opinion that no difficulty whatever exists. The white mulberry *(morus alba)* flourishes luxuriantly in this climate; is easily raised from seed; is not injured by our winters; and may safely be transplanted to almost any soil. The kindest soils, however, are dry, sandy or stony; these soils are preferred to low, rich and moist land. Your Committee believe that there are, on almost every farm, barren spots, rocky pastures, and uncultivated tracts, upon which this tree could be planted at a trifling expense, and would afford another means of a profitable production, to those which the farmers of the Commonwealth already possess. These trees may be planted in the most eligible situation

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as standard trees, or in hedges, which latter mode is considered more convenient for gathering the leaves.

This tree continues to flourish many years. So early as the year 1492, the very year of the discovery of America, a white mulberry tree was introduced into France from Italy, by Guy Pape, of St. Auben, and was flourishing so late as 1802, more than three centuries after it was planted. Leachaux, to evince his respect for this monument of agriculture, and parent of all the white mulberry trees in France, had built a wall around it. Nor is there any thing to fear from the cold of more northern climates; for the white mulberry tree flourishes in Sweden, and also at Pekin in China, although the thermometer descends, in this latter place, almost every winter, twenty degrees below zero. It appears to your Committee that experiments have been made in the vicinity of this capital, by which it is shown, that the tender plants of the white mulberry, raised from the seed, have withstood the cold of our winters with perfect security.

The seed of the white mulberry may be easily procured to any required extent. The growth of the plant is rapid, and if suitable encouragement be given, may be multiplied and spread over the Commonwealth, so that in four or five years the means of feeding the silk worm, and of producing an abundance of silk, may be brought to the door of every farmer in the State. As the work of feeding the worms can be attended to by the domestic part of every family, without interfering in the least with the ordinary business of the farm, it is believed by your Committee, that a new and rich source of wealth may be, with little expense, created for the people of Massachusetts.

Your Committee do not feel it necessary, at this time, to go into an elaborate historical review of the introduction of the culture of silk into the different nations of Europe, nor to advert, generally, to the labours of patriotic individuals, and societies, by whose efforts this source of wealth has been introduced into France, Italy, Germany, and several of the States of this country. But your Committee will take the liberty of adverting to the course pursued in a neighbouring State in relation to this subject. The culture of silk was commenced in the State of Connecticut as early as 1760, by Mr. N. Aspinwall, who planted large nurseries of the mulberry tree in New Haven and the town of Mansfield. This patriotic individual was active in obtaining of the Legislature of Connecticut, an act,

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granting a bounty for planting mulberry trees; a measure in which he was zealously seconded by the celebrated Dr. Stiles. The premium allowed by that State was ten shillings for every hundred trees which should be planted and preserved in a thrifty condition, for three years; and three pence for every ounce of raw silk which the owners of such trees should produce from cocoons of their own raising within the State. The result of this provision of the Legislature is seen at this day, in the flourishing condition of this branch of domestic economy in several towns of that State. We are informed by Mr. Rush, the Secretary of the Treasury, that three fourths of the families in Mansfield are engaged in raising silk, and are making annually, from five to fifty pounds in a family. One or two individuals have made each one hundred pounds in a season. It is believed that there are annually made in Mansfield, and the vicinity, from three to four tons.

The first step to the introduction of this culture must be the planting of mulberry trees. When these shall have arrived to a growth of four or five years, sufficient quantity of leaves will be at hand for the feeding of the worms. When a sufficiency of nutriment is thus provided, the eggs of the most approved breeds can easily be procured, either from our own country or Europe, and distributed throughout the State.

Your Committee feel it unnecessary at this time to enter into a minute detail of facts relating to this interesting subject. The most complete instruction on the management of the worms, can easily be supplied, and from the simplicity of the process may be learned even by children. The time the worm takes in completing its labours, from the egg to the perfecting of its task, is only six weeks. The care of feeding them is rather an amusement than a labour, and when it is recollected that a valuable article of commerce is immediately produced, your Committee cannot doubt that the culture is worthy the attention of this government.

ABEL WHEELER, *Per order.*

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VIII. CIDER.

THE Committee on the article of Cider, ask leave to REPORT :—

There were three samples of Cider only exhibited, none of which came within the rules of the Society in awarding premiums.

Mr. Jeremiah Stickney's cider was made out of the Commonwealth, of course not entitled to premium; besides it was refined with cider brandy, which was very perceptible to the taste.

It was fine in appearance and the taste was agreeable.

Mr. Samuel Bayley's specimen of cider had a musty taste, and was not fine in appearance, and the liquor was obtained from freezing a larger quantity.

Mr. Benjamin Greenleaf exhibited a sample of cider in bottles; the quantity he made was only two barrels in 1828. It was not racked off before bottling which was the first of March and was not fine in appearance; there was added to the cider about one quart of cider brandy to each barrel. It was made from sound fruit of various qualities—the flavour was pleasant and it has a good body.

The Committee would have been quite happy to have been presented with many samples which they could have approved of, but excuse it in part by the crop of apples being so very small the last year, but hope that in future years the farmers will be blessed with good crops and pay more attention to the manufacture of this article, it being one of the essential and staple articles of the New-England farmers.

STEPHEN BARKER, *Per order of the Committee.*

Haverhill, Oct. 1, 1829.

IX. SWINE.

THE Committee appointed to award premiums for Swine, exhibited at the Cattle Show, &c. of the Essex Agricultural Society, at Haverhill, October 1, 1829, REPORT :—

That they have awarded to Mr. John Chase, of West Newbury, the first premium of six dollars, being for his four weaned pigs, six months old this day. The Committee regret that these were the

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only swine entered for premium. There was one boar pig in one of the pens, of common quality, but the Committee were unable to ascertain the name of the owner.

For the Committee.

JACOB TOWNE, JR. *Chairman.*

Haverhill, Oct. 1, 1829.

Medal for Hon. Timothy Pickering,

LATE PRESIDENT OF THE SOCIETY.

THE Committee appointed to procure and present to the Honourable TIMOTHY PICKERING, a suitable MEDAL, with appropriate emblems, expressive of the high estimation in which the Society hold his services as President, he having sustained this office since its first organization in 1818, REPORT :—

That before they had an opportunity of executing the wishes of the Society, expressed in the above vote, the lamented death of the Hon. Mr. PICKERING had occurred. This event occasioned delay on the part of the Committee. They were of opinion however, that they should best execute the objects of the Society by completing what they had originally intended, and by presenting it to his eldest Son and Executor, the Hon. JOHN PICKERING. Having understood that our late venerable President had privately expressed an opinion, relative to such testimonials of approbation and respect, your Committee ventured to substitute a CUP for the Medal voted by the Society. The Committee transmitted the Cup to the Hon. John Pickering, of Boston, accompanied by letter, of which the following is a copy :—

Newburyport, Sept. 23, 1829.

Hon. JOHN PICKERING,

SIR—The Essex Agricultural Society, at their last annual meeting, on occasion of the resignation of their respected President, your venerated Father; after passing a vote expressive of their thanks for his "long, faithful and arduous services as President of the Society"— "*Voted*, that Messrs. Moseley, Adams and Duncan,

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be a Committee to procure and present to the Honourable TIMOTHY PICKERING a suitable Medal, with appropriate emblems, expressive of the high estimation in which the Society hold his services as President." The Committee were preparing to execute this charge (substituting a Cup for the Medal, from respect to an opinion expressed by Col Pickering in relation to the form of such compliments) when his long course of active usefulness was suddenly terminated. On his lamented decease the Committee deemed that they should best fulfil the intention of the Society by presenting to you, his eldest surviving Son and Executor, the compliment designed for your respected Father:—They therefore, in behalf of the Essex Agricultural Society, present to you this Cup, and at the same time would express their respect for those talents and virtues which make you the worthy inheritor of your Father's honors.

We are, Sir, very respectfully, your obedient servants,

EBENEZER MOSELEY,
DANIEL ADAMS,
JAMES H. DUNCAN.

MR. PICKERING'S ANSWER.

To EBENEZER MOSELEY,
DANIEL ADAMS, AND
JAMES H. DUNCAN, ESQUIRES,
Committee of the Essex Agricultural Society.

BOSTON, SEPT. 28, 1829.

GENTLEMEN—I have received, with those feelings which the occasion could not but excite, the Donation on behalf of the Essex Agricultural Society, which was originally intended for my father, as their late President. Had he survived to have received it himself from his friends, and associates, who constitute that respectable body, this testimonial of their respect and of the value attached to his efforts in promoting the honourable and important objects of the Society, would have been highly grateful to him. The affectionate remembrance of myself, on this occasion by that Association of intelligent citizens, whose names will ever be honourably connected with the history of my native County, and whose partiality has new conferred on me this additional mark of the personal regard which

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was so often manifested during my residence among them, again calls for my warmest and most respectful acknowledgements, which I request you to communicate to the Society.

I have the honour to be, gentlemen, with the highest regard, your obedient servant,

JOHN PICKERING.

Inscription on the Cup.

PRESENTED TO THE

HON. TIMOTHY PICKERING,

BY THE

ESSEX AGRICULTURAL SOCIETY,

IN GRATEFUL ACKNOWLEDGMENT

OF HIS IMPORTANT SERVICES AS THEIR FIRST PRESIDENT.

ELECTED.....February 16, 1818.
RESIGNED.....September 25, 1828.

Per order of the Committee,

E. MOSELEY, *Chairman*

Haverhill, Oct. 1, 1829.

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PREMIUMS

OFFERED BY THE

Essex Agricultural Society in 1830.

The Trustees of the Essex Agricultural Society offer to the *Farmers of Essex*, the following list of *Premiums*, amounting to more than *six hundred dollars*, to be paid the present year, if a sufficient number of meritorious claims shall be presented.

I. MANAGEMENT OF A FARM.

For the best cultivated Farm	thirty dollars.
For the second best	twenty-seven dollars.
For the third best	twenty-four dollars.
For the fourth best	twenty-one dollars.
For the fifth best	eighteen dollars
For the sixth best	fifteen dollars.
For the seventh best	twelve dollars.

Persons, claiming these premiums, will be required to state in writing, an accurate description of their farm, specifying the quantity and quality of different kinds of soil, and the means that have been used to bring the same into their present condition;—the proportions suitable for tillage, mowing and pasturing;—the number of acres planted the present year, with corn, grain, or vegetables, specifying the kinds of each, and their respective products, the quantity and kind of manure used for each crop, and the times and manner of applying it;—the number of acres mowed the present year, and the kind of grass and quality of hay thereon;—the number of apple trees on the farm, the proportion grafted, the quantity of fruit, treatment of the trees, and the manner of making and preserving cider;—the number and description of stock kept on the farm through the year, and the quantity of butter and cheese made, and the methods practised in making the same;—the quantity of pork raised;—the labour employed in carrying on the farm.

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And it is expected that the claimants will state the kind of crop, if not able to state the quantity, raised on the several parcels of tillage, mowing and pasture land described in their statements, for two years next preceeding the present.

These statements must be forwarded to the Secretary of the Society on or before the last day of November, the present year.

Persons intending to claim these premiums must give notice thereof to the Secretary, on or before the first day of June next.

The Committee appointed to examine the Farms and to award these premiums, are Jesse Putnam of Danvers, Henry Colman of Salem, Joseph Kittridge of Andover, Moses Newell of West Newbury, Jeremiah Colman of Newburyport, William B. Breed of Lynn, William P. Endicott of Salem, and John W. Proctor of Danvers.

II. DAIRY.

1. For the best produce of butter, in proportion to the number of cows producing it (not less than four) made on any farm within the county, from the 20th of May to the 30th of September, in the present year, - - - - twenty dollars.

For the second best do. do. fifteen dollars.

For the third best do. do. ten dollars.

2. For the best produce of new milk cheese, in proportion to the number of cows producing it (not less than eight) made on any farm within the county, from the 20th of May to the 30th of September, in the present year, - - - fifteen dollars.

For the second best do. do. ten dollars.

For the third best do. do. five dollars.

☞A sample of the butter, of not less than twenty pounds; and a sample of the cheese, of not less than one hundred pounds; must be exhibited to the Committee and the Society on the day of the Annual Exhibition.

Each of the claimants for these premiums will be required to furnish the Committee on this subject, or the Secretary of the Society, with a statement in writing of the entire management of their dairy;—specifying the number, age, and breed of their cows;—the manner in which they have been fed through the year;—their pro-

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duce each month distinctly;—the manner and times of making the butter and cheese, and the method practised of preserving and taking care of the same. These statements must be forwarded on or before the 20th of October next, verified by the oath of the claimant, or other satisfactory evidence.

III. TURNING IN GREEN CROPS AS A MANURE.

For the best experiment of turning in green crops as a manure, on not less than one acre, the experiment to be made in 1830, and a detailed account of it to be given in 1831, and forwarded to the Secretary on or before the 20th of November - twenty dollars.
For the second best - - - ten dollars.

IV. FOREST TREES.

The premiums heretofore offered to encourage the cultivation of Forest Trees, are ordered by the Trustees to be continued for five years next ensuing, to wit:—

For the best plantation of *White Oak Trees*, raised from the seed, not less than one acre, nor less than one thousand trees, in the third year's growth, - - - thirty dollars.
For the second best do. - - - twenty dollars.
For the third best do. - - ten dollars.
For the best plantation of *Locust Trees*, with the same conditions, - - - - - twenty dollars.
For the second best do. - - fifteen dollars.
For the third best do. - - - ten dollars.
For the best plantation of *Larch Trees*, with the same conditions, - - - - - twenty dollars.
For the second best do. - - - fifteen dollars.
For the third best do. - - - ten dollars.
For the best plantation of *White Ash Trees*, with the same conditions, - - - - - twenty dollars.
For the second best do. - - - fifteen dollars.
For the third best do. - - - ten dollars.
For the best plantation of *Chesnut Trees*, with the same conditions, - - - - - twenty dollars.

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For the second best do. - - - fifteen dollars.
For the third best do. - - - ten dollars.

☞ Claims for these premiums may be entered with the Secretary of the Society. The plantations will be examined by Ebenezer Moseley of Newburyport, Andrew Nichols of Danvers, David Cummins of Salem, Benjamin Osgood of Methuen, and John Choate of Ipswich, a special committee for this purpose, in the third year after they are planted. A statement in writing of the entire process of cultivation will be required from the claimant.

V. CULTIVATION OF WHITE MULBERRY TREES FOR THE MAKING OF SILK.

For the best nursery of white mulberry trees, raised from the seed, or from cuttings, in the second or third year of their growth, not less than one thousand in number, - twenty-five dollars.
For the second best do. do. - - twenty dollars.
For the third best do. do. - - fifteen dollars.
For the fourth best do. do. - - ten dollars.
For the fifth best do. do. - - - five dollars.

☞ See the Pamphlet of 1829, for some interesting remarks on this subject.

Claims for these premiums may be entered with the Secretary of the Society; and the Committee on Forest Trees will examine the same.

VI. IRRIGATION.

For the most satisfactory experiment for increasing the crops, upon not less than one acre of land, by irrigation, (that is turning water from its natural current so as from time to time to overflow the land) with a detailed account of the manner, expense, and benefits produced - - - - - twenty dollars.

N. B. Claims for this premium must be entered with the Secretary, so that the Committee for viewing Farms may have an opportunity of examining the crops while growing. If not awarded the present year, it will be continued for the next, and so on for five years, in the hope of producing some valuable experiments on this subject.

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VII. PLOUGHS AND PLOUGHING.

For the best performance in ploughing with teams of two yoke of oxen, - - - - - - sixteen dollars.
For the second best do. - - - twelve dollars.
For the third best do. - - - eight dollars.
For the best performance in ploughing with teams of one yoke of oxen, without a driver, - - - - twelve dollars.
For the second best do. - - - nine dollars.
For the third best do. - - - six dollars.
For the best constructed plough that shall be produced at the Exhibition, - - - - - five dollars.
For the second best do. - - - three dollars.
For the best pair of working oxen at the Exhibition, eight dollars.
For the second best do. - - - five dollars.

REMARKS.

☞ Double teams will be required to plough not less than *seven* inches deep;—single teams not less than *five* inches deep;—and each one quarter of an acre of land. The work is not to be done in a hurry;—but in such a manner as the teams would work three hours together, without extraordinary fatigue. The best work, with least expense of labour, will be the test of merit—Particular regard will be had to the construction of the plough used;—as it is a primary object in offering these premiums, to introduce to common use, ploughs of the best construction.

Persons intending to be competitors for these premiums, will give notice of the same to Joseph Kittridge, of Andover, or the Secretary of the Society, on or before the Monday next previous to the day of Exhibition. Land will be procured for the accommodation of sixteen teams. If more should enter, those first entered will have the preference.—The expense of keeping teams that may travel more than ten miles for this purpose, whether successful or not in the competition, will be paid by the Society, provided it shall not exceed *two dollars* for one team.

The Ploughing Match will take place at 11 o'clock, A. M. on the day of the annual exhibition.

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VIII. COMPARATIVE VALUE OF CROPS AS FOOD FOR CATTLE.

For the most satisfactory experiment upon a stock of Cattle, not less than four in number, in ascertaining the relative value of the different kinds of fodder used for the cattle, as compared with English hay, with a detailed account of the fodder used and the expense of raising the same: the experiment to be made in the three winter months - - - - - twenty dollars.

For the second best - - - fifteen dollars.

For the third best - - - ten dollars.

☞ These premiums are offered, to be paid whenever a meritorious claim is presented to the Trustees, and will be continued for five years.

IX. CIDER.

For the best barrel of Cider that shall be produced at the Exhibition in 1830, a premium of - - - ten dollars; and $5 more will be given for the cider for the use of the Society.

For the second best, a premium of - five dollars.

☞ These liberal premiums are offered for cider, with the hope, that farmers will be ambitious to obtain the same. They will not be awarded unless the article offered, is of a *superior quality*. A description of the whole process of making and preserving the same, in the casks, will be required to be presented to the committee. Only one barrel will be required to be kept, until the time of the Exhibition. This will obviate the objections that have heretofore been made to the offer of these premiums, when four barrels have been required to be kept through the year.

These premiums will be continued for the next year.

X. POTATOES.

1. For the best conducted experiment in the raising of potatoes, on not less than half an acre of land, having regard to quantity and quality; a detailed statement of which is to be furnished the committee in writing - - - - fifteen dollars.

For the second best do. do. - - - ten dollars.

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2. For the best conducted experiment in the raising of Potatoes, from the seed of the apples or green balls—samples of not less than four quarts from each seed of the second year's growth, and the produce of not less than six seeds, to be produced at the Society's Exhibition in 1830 - - - - ten dollars.

For the second do. do. - - - five dollars.

☞ For some interesting instructions on this subject, see the pamphlets heretofore published by this Society; and several communications in the New England Farmer—a valuable work, that should be in the possession of every Farmer.

XI. FOR IMPROVING OUR NATIVE BREED OF CATTLE.

To the person who shall produce at the public exhibition of the Society, in either of the years 1830, or 1831, or 1832, or 1833, or 1834—any number of milch cows, not less than four, of our native breeds, showing manifest improvement therein, by an important increase in the *quantity*, and maintaining, at least, if not improving, the *good quality* of milk; the latter to be tested by the quantities of butter made in the five months next preceeding the exhibition—

For the best - - - - thirty dollars.

For the next best - - - twenty-five dollars.

For the third - - - - twenty dollars.

To the person who shall produce as aforesaid, the best pair of working oxen, or well grown and well trained steers, raised in the County, and improved on the principles hereinafter mentioned, twenty dollars.

For the second best - - - fifteen dollars.

For the third - - - - ten dollars.

To the person who shall produce as aforesaid, the best bull of our native breed, raised in the County, and improved on the same principles, - - - - - twenty dollars.

For the second best - - - fifteen dollars.

For the third - - - - ten dollars.

☞For instruction on this subject, and the particular conditions on which these premiums are offered, see the Pamphlet of 1829.

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XII. IMPROVEMENT OF WET MEADOW LANDS.

For the best experiment in improving, by draining, gravelling, or otherwise, not less than one acre of wet meadow or swamp land, the experiment to have been fully tested by 1830, when the premium is to be awarded, - - - twenty dollars.

For the second best - - - ten dollars.

☞ NOTE. This preminm will be continued from year to year, until some satisfactory experiment shall have been made.

XIII. ANIMALS TO BE PRODUCED AT THE EXHIBITION IN ANDOVER, ON THURSDAY, SEPTEMBER 30, 1830.

For the best bull, not less than one year old, on satisfactory assurance being given that he shall be kept for use in the County, at least 22 months from the day of exhibition, - fifteen dollars.

For the second best do. do. do. - - ten dollars.

For the third best do. do. - - - five dollars.

☞ As the object in offering these premiums is to promote improvement in our breed of stock, the Trustees have thought it proper to direct, that persons who may receive the premiums shall sign an obligation to be left with the Secretary, that they will observe the conditions on which the premiums are offered, or forfeit the same for the benefit of the Society.

For the best milch cow, not less than three nor more than ten years old, with satisfactory evidence, as to the quantity and quality of her milk, and the manner in which she had been fed, fifteen dollars.

For the second best do. do. do. - - ten dollars.

For the third best do. do. do. - - five dollars.

For the best heifer, that has been in milk, three months or more, with satisfactory evidence of the quantity and good quality of her milk - - - - - ten dollars.

For the second best do. do. do. - - five dollars.

For the best pair of three year old steers - ten dollars.

For the second best do. - - - five dollars.

For the best pair of two year old steers - five dollars.

The Trustees have thought proper to renew their premiums upon swine, and offer the following the present year:—

For the best boar - - - - five dollars.

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For the second best - - - three dollars.
For the best breeding sow - - - five dollars.
For the second best - - - three dollars.
For the best litter of weaned pigs, not less than four, from two to six months old - - - - six dollars.
For the second best - - - three dollars.

☞ The person receiving a premium for a breeding sow, will be required to obligate himself to keep the animal for this purpose, at least one year from the time of Exhibition.

No animals will be entitled to receive more than one premium. Animals that have received one premium from the Society, will not be entitled to another, unless it be of a higher order.

Should any animals of fine quality, be presented at the public show, for exhibition, they shall receive such notice from the Trustees, as by their merits they are entitled to. And should they be of extraordinary quality, such gratuities will be tendered, as may reward their owners for exhibiting them.

XIV. DOMESTIC MANUFACTURES.

For the best piece of carpeting, a yard wide, and not less than twenty yards to be exhibited, - - five dollars.
For the second best do. do. - - - three dollars.
For the best piece of stair carpeting, not less than twenty yards to be exhibited, - - - - three dollars.
For the best straw or grass bonnet, - - five dollars.
For the second best do. - - - three dollars.
For the best wrought hearth rug, having regard both to the quality of the work, and the expense of the material, three dollars.
For the second best do. - - - two dollars.
For the best piece of woollen cloth 7-8ths of a yard wide, and twenty yards in quantity, - - - five dollars.
For the second best do. - - - three dollars.
For the best piece of flannel, a yard wide, and twenty yards in quantity, - - - - - four dollars.
For the second best do. do. - - two dollars.
For the best wrought woollen hose, not less than four pair, two dollars.
For the second best do. - - - one dollar.
For the best men's half hose, not less than four pair, one dollar.

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For the best silk hose, not less than three pair, two dollars.
For the best piece of linen cloth, not less than twenty yards, four dollars.
For the second best do. - - - two dollars.
For the best piece of linen diaper, not less than twenty yards, three dollars.
For the second best do. - - - two dollars.
For the best wrought counterpane, having regard to the quality and expense of the materials, - - four dollars.
For the second best do. - - - two dollars.
For the best specimen of wrought lace, - three dollars.
For the second best - - - two dollars.
For the best specimen of work, performed by a child under twelve years of age, exhibiting industry and ingenuity, three dollars.
For the second best do. - - - two dollars.

And should any other articles of domestic manufacture, be exhibited, worthy of attention, a proper notice will be taken of them, and suitable premiums awarded.

GENERAL REMARKS.

All claims for premiums, to be awarded the present year, must be entered with the Secretary of the Society, on or before 9 o'clock, A. M. of the day of Exhibition.

Articles of domestic manufacture must be at the place of Exhibition as early as 9 o'clock, A. M.; and must remain there until 3 o'clock P. M.

Premiums on animals (excepting Bulls and Milch Cows) will be confined to those raised within the County of Essex.

No animal on which a premium has heretofore been awarded by this Society, will be entitled to a second premium; except it be for an entirely distinct premium, and for qualities different from those for which the former premiums were awarded.

No animal will be entitled to have more than one premium awarded for it, at the same Exhibition.

With regard to all the subjects, for which premiums are offered, it is to be distinctly understood, that the Trustees reserve to themselves the right of judging of the *quality* of the animal or article offered;—and that no premiums will be awarded, unless the objects of them are of a decidedly *superior quality*.

By order of the Board of Trustees,

FREDERICK HOWES,
EBENEZER MOSELEY,
ANDREW NICHOLS,
WILLIAM P. ENDICOTT,
JOHN W. PROCTOR,
} *Committee.*

March, 1830.

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AGRICULTURE.

MEETING of the Essex Agricultural Society, at Haverhill, October 1, 1829:—It was proposed by Ichabod Tucker, Esq. of Salem, That the Trustees, be requested to appoint Committees, to take into consideration the following subjects connected with this institution, and to report thereon in writing, at the next Annual Meeting, viz:—

1. Manure, including the materials of which it is composed, and the best mode of applying it.
2. Forest Trees—for Timber, Fuel and Ornament, the best mode of cultivating, &c.
3. Fruit Trees—Fruit, Orchard, Nursery, preservation from the Canker Worm, the Borer, and from all insects and diseases.
4. The Garden, deserving the careful attention of every farmer, and mechanic and men of all professions.
5. The Manufacture of Silk, in connection with the cultivation of the White Mulberry Tree.
6. Irrigation and Draining Land.
7. Improving our Native Breed of Cattle, for the Dairy, for Labor, Travelling, Food, &c.—Horses, Mules, Cows, Oxen, Sheep and Swine.
8. Pasture Land, can any thing be done to restore barren pasture, which cannot be ploughed.
9. Improvement in Farming Tools.
10. Buildings and Farm-steads.
11. Division of the Farm into Garden, Tillage, Mowing, Pasture, Orchard, Wood, and Roads.
12. Fences, Live Hedge, &c.
13. Feeding Cattle, cooking Food by Steam, &c. Soiling, &c.
14. Grasses, best adapted to various soils, for Mowing and for Pasture.
15. Agricultural Chemistry.
16. Agricultural Catechism, including Interrogatives upon all branches of Rural Economy.

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17. *Bees*—character, mode of treatment, what crops cultivated for them, &c.

Whereupon, it was voted by the Society, "That the communication from Ichabod Tucker, Esq. relative to the appointment of Committees, on several important subjects relating to Agriculture, with a view to preparing reports or dissertations thereon, to be communicated to the Society,—be referred to the Trustees; and that they be requested to adopt such measures in relation to the same, as will best promote the object in view."

Attest, J. W. PROCTOR, *Secretary.*

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HINTS

ADDRESSED TO THE

FARMERS OF ESSEX COUNTY.

WHATEVER may be said of other countries and climes, the inhabitants of Essex County have no just reason to complain of the location which Providence has assigned them. Whoever traverses this County will see perhaps as few marks of poverty as in any parts of the country, which have been as long settled, and fewer than in many parts, whose settlement has been more recent. If he does not find many examples of great wealth, especially in our rural establishments, he may observe numerous indications of thrift, comfort, and substantial independence, and the reasonable rewards of enterprise, perseverance, frugality, and industry. The general aspect of the County is diversified and broken, and on that account favorable to health. On a comparison of the bills of mortality in those places, where they have been so kept that this comparison could be properly made, as in Ipswich for example with Breslaw in Europe,* a place deemed the most healthy on the continent, the result was greatly in favor of the longevity of this County. We should not know where to look for a population more respectable for its general intelligence, public order, and good morals. These are eminent blessings, and should produce grateful contentment and a rational use of our advantages.

We have no extraordinary fertility of soil; no rich alluvion; no deep intervale on the borders of the streams by which the County is watered. We have little sandy land, but a great deal of a thin, hungry, gravelly surface, and a considerable extent, in scattered parcels, of low and wet swamps abounding with peat and capable of being drained and converted into productive meadow, at an expense,

* Memoirs of American Academy, Vol. I., p 565.

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if well managed, which may be fully remunerated by two or three of the first crops. Besides this, we have considerable quantities of superior land; a good soil resting upon a clay or hard pan and retentive of the manure which is put upon it. Our bogs and swamps in the interior of the County furnish abundant means of increasing our manure and enriching our uplands; and as a large part of the County is washed by the sea, the grounds in its vicinity are benefitted by the saline atmosphere; and the means of greatly increasing their fertility by muscle bed and sea-wreck are within our reach. Of these advantages many of the farmers in the neighborhood of the ocean avail themselves, and the products of some of the farms in the County, both in the interior and on the sea-board, are highly creditable to their industrious and intelligent cultivators.

We have authentic statements, by which it appears that the following amount of crops have been raised at different times in different parts of this County:—

Of Wheat—24 bushels, and 26 bushels to the acre.*

Of Indian Corn—70 bushels; 72 bushels; 71½ bushels; 90½ bushels; 93¾ bushels; 105 bushels 6 quarts; 110 bushels; 113½ bushels; 115 bushels; 117¼ bushels.†

Of Barley—50 bushels; 51½ bushels; 52 bushels and 18 qts.

Of Potatoes—518½ bushels.

Of Carrots—849 bushels; 864 bushels; and 878 bushels, at 56 lbs. per bushel; and 900 bushels.

Of Mangel Wurtzel—924 bushels; and 1340 bushels to an acre, at 56 lbs. per bushel.

Of Ruta Baga—688 bushels.

Of Beets—783 bushels.

Of English Turnips—636 bushels; 687 bushels; 672 bushels; 751 bushels; 814 bushels.

Of Onions—651 bushels.‡

We know of a lot of six acres from which thirty tons of Hay, actually weighed, were gathered in one season; and another field of about forty acres, from which, according to the statement of respect-

* The average produce of wheat and rye in Great Britain is 18 bushels to the acre. See Armstrong's Treatise on Agriculture, p. 31.

† Mr. Burnham's crop of 117¼ bushels was rated at 50 lbs. to a bushel. Messrs. Little's of 115 bushels at 56 lbs. to a bushel. Rating Messrs. Little's crop at 50 lbs. per bushel, it would be equal to 134 bushels to the acre.

‡ The above statements are to be found in the Memoirs of the Massachusetts Agricultural Society, and the Reports of the Essex Agricultural Society.

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able and disinterested individuals, the yearly crops have averaged more than one hundred and twenty tons, or three tons to an acre. We can point to a small dairy establishment,* the produce of which, when all circumstances are considered, is probably not surpassed in the State, where seven of our native cows, with no extra feed whatever, have averaged a yield of 160 lbs. each of butter in a season; and another† where with high feeding five cows have produced 208 lbs. in a season to a cow.

We may likewise refer to the Salem Alms House farm, as an example of successful husbandry, which for the size of the farm, we believe is not surpassed in the country. We admit that they have every advantage both of labor and manure; but it is honorable so successfully to avail themselves of these advantages. We here subjoin an account of the last year's produce, (1829) which, as we have received it from the clerk of the establishment, may be entirely relied on; "the same being as near the quantity produced as can be ascertained, without actual weighing and measuring."

75 tons of English hay,
3 " salt hay,
600 bushels corn,
4000 " potatoes,
200 " barley,
500 " turnips,
200 " beets,
600 " onions,
100 " carrots,
50 " pease in pod,
30 " beans do.
10 tons squashes,
10 " pumpkins,
300 dozen cabbages,
200 lbs. sweet marjorum,
300 " sage,
200 " balm and other herbs,
40 " garden seeds, various sorts,
50 bushels cucumbers,
3 tons melons,

* Of Jesse Curtis of Marblehead. See Report on the Dairy for this year.

† Of Jesse Putnam of Danvers. See Report of Essex Agricultural Society for 1826.

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100 bushels radishes,
Broom corn for 12 dozen brooms,
500 roots celery,
300 fowls,
11600 lbs. pork,
10 calves,
200 cords manure,
Apples, plums, peaches, cherries, &c. but few—say 10 bushels,
Stock kept on the farm,—

Oxen, average number	10
Cows " "	10
Horses	2
Bull	1
Hogs of all ages,	80

35 acres of ground were cultivated,
50 " " " mowed.

This farm contains now probably about 110 acres, several of which being ledge, are incapable of cultivation.

These statements are honorable to the County; and if, any person would see what judgment, industry, and perseverance can effect under almost every disadvantage, let them visit the farm of Ichabod Nichols, Esq. on the Salem Turnpike, a place so aptly denominated by a traveller "the abomination of desolation;" where, in the midst of rocks and bogs, upon which a man must have had the courage of a hero to look with the thoughts of subduing them, we find productive meadows, and well cultivated fields; and a milk establishment of upwards of thirty cows, alike creditable to the perseverance and productive to the pocket of its indefatigable proprietor.

The farms in the County can none of them be called large; and many of them have been subdivided to an injurious extent. If a man has a large family of children to establish, and wishes to form them to the honorable and industrious habits of an agricultural life, we advise him to emigrate into those new countries, where land is fertile and cheap; and he can form a sort of patriarchal colony around him. The homestead with us is too small to admit of farther division. If he wishes to engage largely in the raising of Live Stock, or in the cultivation of Hemp, he is promised, in the fertile alluvions of the Western States, advantages, which are not to be

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found here. But if, on the other hand, it is his main object to obtain a comfortable support, and, for a man of moderate desires, a decent independence, what is an inhabitant of Essex County to gain by emigration. To say nothing of the expenses of removal and the numerous privations and hardships incident to a settlement in a new country; in point of pecuniary profit we believe that the advantage is on our side. If on the banks of the Ohio he may obtain eighty bushels of Indian corn to an acre, we may easily produce fifty. The eighty bushels, if he is so fortunate as to find a market, may bring him twenty cents per bushel, equal to sixteen dollars per acre. His fifty bushels here will ordinarily bring him seventy cents per bushel, which is thirty five dollars. Labor is nearly as dear in Ohio as it is here, though without doubt the lands are of much easier tillage. One great difference is in the expense and trouble of manuring our lands, for which there will be more than an equivalent in the increased value of the crop. Let the farmers of Essex then, according to the French proverb, "if they stand well, stand still"; and instead of complaining of the hardships of the times and the small profits of farming, let them make the best use of the means of comfort and of bettering their condition, which they possess; and look considerately on the peculiar blessings of that improved state of society in which they live, instead of being dazzled by the bright visions of more fertile soils, and abundant products without labor, which have deluded so many to their ruin.

It must be admitted that the farmers of Essex County have singular advantages from their proximity to good markets. Their produce they can easily sell for cash. Haverhill, Andover, Lowell, Amesbury, Newburyport, Salem, Marblehead, Lynn, and Boston, furnish opportunities for the disposal of out produce at as good prices as are to be obtained in any part of the country. With all this however the agriculture of Essex County is not in an improved condition. Very little is accomplished compared with what may be done. We shall refer to some prominent defects or faults in our husbandry; and with a proper respect for the judgment of those more competent than ourselves to treat this subject, we will hazard a few hints as matters of inquiry and reflection.

It must be admitted, in the first place, that there is a great want of system in our agricultural operations. Few farmers lay down any regular plan of cultivation or pursue any regular rotation of crops; but appear to be governed rather by accident, or caprice, or

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hereditary custom, than by any well matured plan having in view the gradual and permanent improvement of the whole farm. We know instances in which Indian Corn has been planted in the same spot upwards of ten years in succession and potatoes nearly as long. The consequences are the gradual inpoverishment of the soil, diminished crops, and the neglect of other and valuable parts of the farm, which are doomed to the product of a sour or scanty herbage or to perpetual barrenness and neglect. It does not now remain to be proved that good husbandry requires a change and alternation of crops;* that crops of the same kind on the same land should not immediately succeed each other; that it is a wasteful husbandry, which year after year spends the manure of the farm on the same pieces of land to the neglect of other parts of the farm; and that a skilful farmer will aim by a regular course and in succession to go over the whole of his farm, which is capable of being subjected to the plough, and bring it all both arable and pasture into as good a condition as he can. The intelligent husbandman should look at his whole farm to decide what should be done; determine the quantity to be cultivated by the amount of labor and manure, which he can apply to it; and then arrange his rotation of crops so as to take up one part after another in succession, that in the end the whole shall be brought under a regular and systematic course of improvement.

We shall speak next of our improvident or unskilful management of manure. Manure is essential to successful husbandry; yet in few instances is half the amount made, which with little trouble might be made. Of what is made a large portion is wasted by exposure to the sun and rains.—We shall say nothing of the advantages of barn cellars and vaults because they are deemed expensive. But we will suggest a few simple rules, which every farmer may observe. Litter your stock with whatever of coarse fodder or refuse hay or leaves you can procure, for their comfort and your interest. The best farmer that Switzerland ever produced (Kliyogg) took care that his cattle should stand knee deep in litter.—Fill your pig styes and barn yards with litter, or mud, or loam drawn from the sides of the roads, or wherever it can be taken without injury to the

* "For more than half a century the rotation system has formed the true test of agricultural improvement in every variety of soil and climate. Whenever it has been adopted the art is found in a state of prosperous progression; whenever neglected or rejected it is either stationary or retrograde." Treatise on Agriculture, p. 81.

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farm. Confine your cattle as much as possible when at home to your barn yard; and never suffer them to be in the roads; or to waste their manure at their watering places. In the morning throw the droppings of every night into a heap and cover it with a light coat of soil. It is a better plan to house your cattle every night as much in summer as in winter, unless the weather is extremely hot. In general, if the barn is well ventilated they will be as comfortable in doors as out, and in this way your manure heap will be greatly increased. Take care of the contents of your privy, and save the refuse of your sink by throwing it upon a compost heap, or making the deposite where it can easily be removed. The privy and sink on many farms are most offensive places, and are sometimes so situated that they compel one to think that their owners have scarcely made an approach to a state of civilization.* We should copy the extreme carefulness in this respect of the Chinese and the Flemish farmers, who suffer nothing to be lost. A good farmer should look upon manure of every description as money, which he may place at once at compound interest, and the payment of which is sure. There is no provision of nature, which is adapted more to strike the reflecting mind with grateful astonishment, than that by which the most offensive substances, instead of remaining to pollute the air and destroy the health and comfort of man, are converted into the means of fertilizing the earth and return to bless him in all the varied forms of beauty and utility, in flowers and fruits and the more substantial products of esculent vegetables and grain. Manures decidedly improve each other by being mixed in compost rather than applied singly. For almost all crops they are of much greater value applied green than kept over the year;† and where a farmer cannot form a cellar under his stables, he will find his account in erecting a cheap and rough shed over his manure heap to preserve it from the wind and sun and drenching rains. The expense of it when attached to the barn need not be great, and will be much more than compensated by the advantages gained by it.

* We trust we shall be excused the plainness of these hints, but they concern health, comfort, and interest. A vault walled with stone is to be preferred, but if you have not this, place under the necessary a wooden box with or without a bottom, about two and a half feet deep, and let it extend three or four feet behind the building, having a close but moveable cover; and then having a load or two of loam placed near, by throwing a few shovels full in every two or three days, you will effectually prevent the place from being offensive both within and without; and the contents may be easily removed at any time to the compost heap without disgust or inconvenience.

† See note A. at the end.

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We speak next of the winter keeping of our Stock. Though there are numerous honorable exceptions, our cattle do little credit to their owners; and when spring arrives it often happens that our cows, and young stock especially, are lean, dirty, and hide-bound, and indicate pretty strongly the neglect and hardness of their masters. In many cases, if the farmer can get them through the winter alive upon salt or fresh meadow hay, he congratulates himself on having performed his duty and saved his money. But it is a false economy, and the farmer as well as his cattle are sufferers by such neglect and hard usage. We do not require of the farmer to give much English hay to his cattle, excepting to his milch cows in the spring, because it is too expensive a feed; and it is in general the principal article of produce upon which he depends for the payment of his labor and the pecuniary wants of his family. His meadow hay should be well cured and salted; at least half a bushel of salt to a load. His corn fodder, both top and bottom stalks, should be cured and saved with as much care as his English hay. So too with his barley, rye, and wheat straw. He should lay in a quantity of salt hay if his situation admits of it. To these he should by all means add a plentiful supply of vegetables; mangold wurtzel, Swedish turnips, carrots, or potatoes. The three former, when planted on ridges formed by turning a back furrow, the manure being deposited under the ridge, being once thinned carefully and afterwards cultivated by a plough or drill harrow, may be raised, taking into the account the cost of twenty-five bushels of seed potatoes to an acre, at as little expense as potatoes; and with cultivation, which will give 200 bushels of potatoes, you may ordinarily calculate upon 500 bushels of carrots, Swedish turnips, or mangold wurtzel.

An acre of carrots yielding six hundred bushels, and nine hundred have been obtained in this County, allowing to a horse three pecks per day, in which case he would require no grain and very little hay, which might be coarse hay, would be equal to the keeping of a horse for a term of two years; but as horses are ordinarily kept besides the grain which they require, a horse to be kept in good condition would need for a year more than four tons of good hay or more than eight tons for two years; now allowing one ton and one quarter of hay to an acre, which may be considered as a fair average, the produce of an acre of carrots, as far as and while it can be applied to the feeding of a horse, is equal to more than six acres of land in hay. The manure made from succulent vegetables is

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doubtless preferable to that from coarse dry food; the health of the animals fed upon them is much better.

Swedish turnips are easily raised and are a valuable food for cattle. One of the most eminent farmers and breeders* in England, at a public meeting in November last, declared that after several years experience he deemed them for feeding stock superior to every other species of vegetable. Mangold Wurtzel is a more precarious crop; it does not keep so late, and is much more likely to be injured by early frosts. It is said likewise, and some instances within our own observation seem to favor the belief, that where it is given abundantly to milch cows, while it increases the quantity of milk, it tends to reduce their flesh. We have found the Swedish Turnips a nutritious and excellent root for neat cattle and sheep. Swedish turnips have been kept perfectly free from frost, even during this inclement winter, by being placed in a vacant mow and secured top and sides and bottom with a thick covering and flooring of refuse salt hay. Another advantage of this root is that it may be kept in a sound state until June. Jesse Buel, Esq. of Albany,† has raised good crops for several years by planting them on land from which the same year he had taken a crop of grass. Good crops of nearly four hundred bushels to the acre have been obtained in this County, on land broken up after mowing and planted the 18th of July. The fall however in this case was unusually favorable; and the crop would doubtless have been better, if the planting had been earlier.

We will not quit this part of our subject, without calling the attention of farmers to the value of boiled carrots as food for swine. By several accurately conducted experiments, for which he received the Agricultural Society's gold medal, Arthur Young, the distinguished English farmer, demonstrated that boiled carrots as food for rearing and fattening swine were greatly superior to boiled potatoes. If then, as we have grounds to believe from repeated experiments, 500 bushels of carrots can be raised at as little expense as 200 of potatoes, the farmer will find no difficulty in making an inference most important to his interests. We have a detailed account of these several experiments in relation to boiled carrots, but have no room for their insertion.

We remark in the next place upon a practice too common among

* The Rev. Henry Berry, British Farmer's Magazine, Nov. 1829. p. 481.

† See Note B at the end.

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our farmers, and prejudicial to their interests;—we mean the practice of permitting our teams so often to lie idle. It has grown into a proverb with the English farmers, that if a farmer does not keep the plough going he will fail. To every single or double team in English farming a ploughman or driver is attached, whose sole business it is to take care of his horses and keep them always at work. In general, on farms where labor is hired, if the farmer can afford to keep a team he can afford to keep a teamster, who should be constantly employed with that team; he should no more consent to let his team lay idle day after day, than to let his hired men lay idle day after day. We should therefore plough much much more land than we do; and when the team is not otherwise occupied it should at least be employed in procuring and carting to the compost heap materials for manure; or in removing stones, or in carting gravel on to meadows, if that is deemed the best method of reclaiming them; or in other purposes, which the circumstances of the farmer may suggest. At any rate as a yoke of oxen or a horse cannot be kept but at very considerable expense, their labor should not be lost, where, as in most cases, it is possible to apply it. This can be best done by having a man, who shall be attached to a team, and whose business it shall be, except in cases of extraordinary demand for his labor in other services, to employ this team.

The gains of husbandry, even under the most successful cultivation, must be small, and in our system of farming must arise from small sales and small savings. But if the gains are small the risks are proportionably small; and if there are none of the extraordinary and splendid accumulations there are none of the painful anxieties and the extreme risks of commercial life; and men are secure from those habits of inordinate speculation in which if they do not, as is very common, in the end lose all their property they too often purchase success at the expense of all honor and principle. We have often heard it remarked by intelligent merchants in Boston, that of those engaged in trade from one cause or another more than three fourths become bankrupt or die insolvent. We have no doubt of this fact; and it ought to restrain the anxiety and morbid ambition which prevails so generally among parents, to place their children in trade and to bring them up in the expensive habits of city life. A good farm well managed will yield a fair compensation for labor; and there are no situations among us more truly independent than that of the man, who, to the advantages of a well managed farm, adds the profits of some handicraft trade, which gives

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him employment in inclement weather; and during the long vacation from agricultural labors, which winter brings with it. Two great drawbacks upon the farmer's prosperity have hitherto been the use of ardent spirit and the extravagant price of labor. The former evil, is vastly diminished; and we believe that more than one half of the farms in this County will this year be managed without the use of a drop of ardent spirit; in truth, it is becoming quite disreputable to use it, and no custom can stand long against public opinion, when it is once thoroughly set against it. The price of labor is still inordinate, but this must come down. The price of labor ought to be regulated by the price of bread and clothing. Formerly wages were considered ample when a man could earn a bushel of corn or grain in two days; now he can often obtain two bushels in one day; formerly the laborer was well paid if he could earn the cloth for a shirt in three days, and now he can obtain the cloth for three shirts by the labor of one day. The price of all mechanical labor, of which the farmer must sometimes avail himself, is most exorbitant, such as that of the carpenter, the wheelwright, the blacksmith, the mason. The blacksmith charges you a dollar and a quarter or a dollar and a half for shoeing your horse, and two dollars or more for shoeing your oxen. The materials of iron and coal for the horse cost about thirty four cents, and for the oxen not twice as much, and the time employed does not exceed two hours for each animal. Other articles of the labor are equally dear. The mason charges you two dollars and sometimes two dollars and a quarter per day; that is, in a trade in which their is no mystery, for labor which is not harder than common farm labor, and where the tools cost almost nothing, he must receive enough per day to purchase more than four bushels of corn, or nine bushels of potatoes, and more then twenty yards of good cotton cloth for sheeting or shirting. We begrudge no man his honest gains; but while every effort is made to grind down the farmer to the lowest possible price for his products, we can but hope that the time will come when the price, which he himself is obliged to pay for labor, will bear a juster relation to the compensation which the community is willing to make him for his own. These, as we observed, are great draw-backs upon the farmer's success; they compel a prudent man to forego many improvements which he would otherwise make, and to husband his resources with an extreme frugality.

We inquire in the last place to what sources may a farmer look for a remuneration of his labor. The farms in the County, as we

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have remarked, are small; the system pursued therefore must be adapted to this fact. The raising of stock, either neat cattle or horses or sheep, must be left to those parts of the country, where land is cheap, pasturage abundant, and hay finds no market. It is not certain however that cattle may not be fattened here to advantage, or as the butchers term it topped off or finished; that is, purchased in the autumn in good condition and sold improved in the spring; and the increase of weight and of price be a fair equivalent for the cost of provision. This will be finding the best home market for our farm produce, and the valuable manure obtained will be more than a compensation for the attendance. There is nothing so much against this system as the great profits or commissions of the butchers. The experiments of several farmers in this matter in a small way have been such as to favor rather than to discourage further trials; although the extraordinary depression in the Brighton market the last year has occasioned a serious loss to some extensive feeders in the interior.

The Essex farmer must make two inquiries for himself. The first what can he produce on his farm for the necessary consumption and support of his own family? The farming produce, which goes without waste to this account, is always disposed of to the best profit. Here by the way let us ask what is the reason that throughout the country there is not one farmer in ten, perhaps in forty, who has any thing like a good kitchen garden; the principal labor of which might be done by his own children, or domestics, and which would contribute greatly to the support, the health and the luxury of his household, by a bountiful supply of early and various vegetables and fruits. Under this head too we will suggest only one rule, which is, that he should as much as possible rely upon the produce of his farm for his support, that is live as far as possible upon its products—A good farm may be made to yield a plenty of meat, milk, butter, cheese, poultry, eggs, bread, vegetables, cider, fruit, honey, and wool;—and when a man can have all these in abundance, need he complain of want; and will he not be as comfortable and his children as healthy to be fed upon good bread and milk as upon tea, coffee, and sugar, which are such a drain upon our earnings; and ought he not to beware, above all, of the consuming moth of a butcher's bill, who must furnish over overloaded tables with meat at least three times a day; and the expense of foreign and superfine flour, instead of the substantial brown wheaten loaf or Indian bannock, with which our fathers were satisfied.

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The next inquiry, which the Essex farmer should make, is what can he raise to sell?

Hay is one of the first articles, and will yield ordinarily a fair profit. We have this advantage, that there is not a town in the county, which may not find a market for its hay. The Ipswich farmers have for years found a profit in transporting vast quantities to Boston market by land in spite of the competition of the neighboring towns, and the screwed hay from Maine.

Fruit is another article for which a ready market is generally found. The produce of the orchard of one farm in West Newbury* has been equal for several years, before the two last, when the owner is suffering from the canker worm, to six or eight hundred dollars per year.

Indian Corn is the next crop which should claim the farmer's attention. This crop is the greatest blessing that ever was bestowed upon any country. It is not a more exhausting crop than potatoes or any other crop, as may be ascertained from the result on those places where it has been raised for years in succession on the same ground, with tolerable success. The cost of the seed is a mere trifle. The labor of cultivation will be greatly lessened when we learn to use the horse plough and the drill harrow more and the hoe less, and renounce the old and useless systems of hilling and half hilling—The best product has been obtained by planting it in drills from north to south, that it may have the full benefit of the sun. A successful trial, we are told, has been made the last year at the Alms House, in Haverhill, of cultivating it on a level surface without hilling at all, with a horse harrow, and not putting a hoe to it after the planting, the children of the establishment having been employed to weed among the plants. The produce of corn fodder from an acre for the feed of any neat stock, if well cured and chopped, is nearly equal to a ton of English hay. There is no crop which returns so much to the ground; potatoes return nothing where the crop is sold. The fodder from an acre of corn when the crop is good, in the opinion of Chancellor Livingston of New-York, will pay the labor of cultivation; and if the manure is furnished by the farm the grain may be considered as clear profit.

The Dairy should be the next object of an Essex farmer. All the butter and spare poultry which the County can produce may be sold as fast as it is made and reared in the several towns and villages

* Statement of William Thurlow—Essex Reports for 1828—p. 29.

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which are accessible to different parts of the County. These are articles therefore for which the farmer may command ready money. By the way however we greatly object, unless it is very near, to the farmer himself going once a week to the market* where he is most likely to be tempted to waste a whole day and to incur needless expense. We recommend therefore that our farmers should do as is done in many parts of Worcester county, where some established market man goes once or twice a week to Boston and sells the produce of his neighbors in poultry, butter, eggs, &c. on a fair commission. The profits of a Dairy under the best management will not be great—but may be a fair compensation, especially if the cows are well fed in winter and succulent food is provided for them as it may easily be in summer, by the raising of corn sown for the purpose of cutting green and keeping up their milk, when the pastures fail.

The next object is the fattening of pork. We cannot in Essex County raise our pigs so cheaply as we can purchase them from New York and Vermont; but if we purchase them at a suitable age and of a good kind, why may they not be fattened here without loss and perhaps with a small gain? If there is no loss, the manure obtained and the consumption of the offal of the Dairy and farm is of great moment. We are aware that much must depend on the actual price of corn here, for on that we must mainly rely for fattening them; but this is always as low on the seaboard as it is one or two hundred miles in the interior. On this subject we do not presume to speak with confidence; but we propose it as matter of fair and accurate experiment to some of our intelligent farmers, feeling a strong persuasion, especially if boiled carrots are as beneficial as they are represented to be,† that the result will be favorable.

We shall speak of but one subject more, in which we call upon our female readers, should any such honor our remarks with a perusal, to aid in the labors of husbandry and to share likewise liberally in its profits.

The town of Mansfield, in Connecticut, produces annually, as appears by authentic statements, from forty to fifty thousand dollars worth of silk; almost the whole of which from the hatching of the worms to the reeling of the silk is the produce of female and children's labor. The expense of capital, required to begin an establishment on the Connecticut plan is, we are told, very small indeed.

* See Note C. † See Note D.

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Is not Essex County as favorable as any part of Connecticut to the raising of silk; and are not our wives and daughters as intelligent and as well disposed to be useful and industrious as any? We throw out these hints on a subject, on which we do not profess to have any experimental knowledge, for their consideration.

We have extended these observations further than we had designed; at the same time we have very cursorily glanced at many subjects, upon which we might refer to numerous facts, if we had the opportunity, in proof of our remarks. We address them to an intelligent and industrious community, in hopes that they may excite to inquiry and reflection with others. We look upon the cause of agriculture as essentially that of humanity, public happiness, good morals, and religion. Whatever serves to increase the means of subsistence and comfort concerns humanity. Whatever contributes to make the country more beautiful and more bountiful, promotes both individual and public happiness. Whatever leads men to be industrious and frugal, essentially concerns their morals. Whatever increases our attachment to our homes, and strengthens our domestic affections by making our homes comfortable and happy, must make us more sensible to God's goodness. More than this, Practical Agriculture must lead a man constantly more and more to study the works of nature and to contemplate with wonder and gratitude the miracles of divine providence, which are presented to his observation in the beautiful progress of the seasons and their appropriate and various products. "Nature is God's earliest revelation" and it is full of instruction. Our Saviour bade his disciples strengthen their faith in the protecting providence of God by looking at the birds of the air and the flowers of the field. The enlightened and reflecting farmer, in surveying the products of his labor, the various operations in which he is called to perform his part, and the brute animals, who gratefully acknowledge his care and look up to him as the almoner of the divine bounty to them, will find constant and powerful incitements to think of and to honor God, the great husbandman, whose rain enriches, whose sun warms the earth; and who in his goodness has placed man in his vineyard that he may till and dress it.

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NOTES.

NOTE A.

MANURE.

For the application of manures see the quotations from Arthur Young's prize essay on manures, in Memoirs of New York Board of Agriculture, Vol. II. p. 264. He gives the authority of upwards of twenty most intelligent and experimental farmers, who are decidedly in favor of applying manure in a green or unrotted state to all crops, which admit of being hoed.

"With respect to laying on manure, says Mr. Wilkes, I have experienced that dung carried from the stable yard at not more than three days old, and laid directly on the land both in summer and winter (that is in England) has an advantage of twenty per cent over that dung, which is kept from nine to twelve months."

"It has become a pretty well settled principle among good farmers (says Jesse Buel, Esq. of Albany, one of the best farmers in the country) that we should never delay applying manure because it is unfermented or unrotted; but on the contrary that they are the most profitably applied before fermentation commences, or while it is in an incipient state."—*N. Y. Memoirs, Vol. II. p.* 229.

"Our eyes and nose, without the aid of chemistry, are sufficient to inform us, that farm yard manure loses one half, if it be kept twelve months; and in proportion if it be kept a shorter time, while the season favors decomposition."—*Lorain's Husbandry, p.* 100.

"Those parts of a field to which short dung was applied gave the best crops the *first* year, but those on which the long dung had been laid, gave the best crop the *second* and *third* years; a fact which authorises the conclusion that if we wish to obtain *one* great crop the rotted dung is best; but when we look to more permanent improvement the long dung is to be preferred."—*Armstrong's Treatise, p.* 65.

"It is a common practice amongst farmers to suffer the farm yard dung to ferment till the fibrous texture of the vegetable matter is entirely broken down, and till the manure becomes perfectly cold, and so soft as to be easily cut by the spade. There are many arguments and facts which show that it is prejudicial to the interests of the farmer.

"During the violent fermentation, which is necessary for reducing farm yard manure to the state in which it is called *short muck*, not only a large quantity of fluid but likewise a gaseous matter is lost; so much so that the dung is reduced one half or two thirds in weight; and the principal elastic matter disengaged, is carbonic acid with some ammonia, and both these if retained by the moisture in the soil are capable of becoming a useful nourishment for plants."—*Sir Humphrey Davy's Lectures, p.* 269.

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"Within the last seven years Mr. Coke (perhaps the greatest farmer in the world) has entirely given up the system formerly adopted on his farm of applying fermented dung; and he informs me, that his crops have been since as good as they ever were, and that his manure goes nearly twice as far."—*Ibid. p.* 272.

NOTE B.

SWEDISH TURNIPS.

Mr. Buel's experiments are fully detailed in the Memoirs of New York Agricultural Board, Vol. II. p. 249, and Vol. III. 83. Those who know the character of this gentleman know how entirely his statements may be relied on. We subjoin an extract from his second communication.—Vol. III. p. 83.

"The second experiment was upon a lay, partly of lucerne, too thin to be worth preserving, and partly of clover. The first was cut twice for green food, and the latter once for hay. The ground having been manured was ploughed and harrowed, and the seed drilled in, at the distance of three feet between the rows, the 28th June. The crop was cleared, thinned, and hoed in the usual way; and the product was between five and six hundred bushels, or about sixteen tons on the acre.

"Encouraged by this success, I this year put in two and a half acres. Being short of pasture, I fed off the clover in June, instead of cutting it for hay; manured, ploughed, and harrowed the ground. A man was employed half a day in putting in the seed with a drill-harrow. The crop was between 1300 and 1400 bushels. Some of the roots weighed between 15 and 16 lbs. each. The tops nearly equal in bulk to an ordinary crop of grass were fed to my cows in November and December, with great benefit to their milk as well as flesh. The roots were pitted in the field."

NOTE C.

MARKETS.

"The weekly attendance on markets is a great loss to small farmers, whose individual labor in many instances is an object, but whose personal superintendence must always be material. When stated as a period of relaxation, I am always ready to make great allowances; but fifty-two idle days, or the sixth part of a year, is a sacrifice, a prudent man would hesitate about. It is probable that not one farmer in twenty is aware of the sacrifice.—*Curwen's Hints, p.* 245.

Let us state the account as nearly as we can rate it.

52 days at 50 cents, - - - -	$26 00
Loss of the work of a Horse, 50 cts. per day,	26 00
Expenses, tolls, &c.—40 cents per day,	$20 80
	$72 80

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NOTE D.

FEED FOR SWINE.

From Arthur Young's Prize Essays on Rearing and Fattening Hogs.

EXPERIMENT II.

"At the same time (March, 1765) with the preceding trial, four lots of pigs, that had been weaned three months, were equally drawn from my farm-yard, five in each lot. They were confined as before, each lot to a stye, and cleaned at the same time; their food was as follows:—

No. 1. Bran (wheat) mixt with milk.
2. Boiled Potatoes.
3. Boiled Carrots.
4. Raw Carrots.

They were kept to this food thirty days, and then viewed them as before with the same person.

No. 3. Much the best,—boiled carrots.
1. Next,—bran and skim milk.
2. Next,—boiled potatoes.
4. Worst,—raw carrots.

Boiled carrots appeared very clearly on this trial to be an admirable food for hogs of this age;—Boiled potatoes appear also a good food, &c.

EXPERIMENT VI.

The month of December, 1766, twenty pigs, that had been weaned a month, were draughted into four parcels, and kept that month, separately in the following manner.

No. 1. Boiled carrots.
2. Boiled potatoes.
3. Boiled turnips.
4. Boiled cabbages.

At the end of the month they were turned out and viewed attentively. The result was:—

No. 1. The best,—boiled carrots.
2. Next,—boiled potatoes.
3. and 4. Equal,—all nearly dead.

Carrots continue in every trial superior to all common vegetable food. I am not at all surprised at the ill success of turnips and cabbages."

There are many other Experiments detailed, giving similar results, of which our limits forbid the insertion.

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EXTRACTS

From Washington's Agricultural Notes—written in 1799.

"It is the indispensable duty of him, who is employed to overlook and conduct the operations of a Farm, to take a prospective and comprehensive view of the whole business, which is laid before him, that the several parts thereof may be so ordered and arranged, as that one sort of work may follow another sort in proper succession, and without loss of labor or time; for nothing is a greater waste of the latter, and consequently of the former, (time producing labor, and labor money,) than shifting from one thing to another before it is finished, as if chance, or the impulse of the moment, not judgment and foresight, directed the measure. It will be acknowledged, that weather and other circumstances may at times interrupt a regular course of proceedings, but if a plan is well digested before hand, they cannot interfere long, with a man who is acquainted with the nature of the business, and the crop he is to attend to."

"Every attentive and discerning person, who has the whole business of the year laid before him, and is acquainted with the nature of the work, can be at no loss to lay it out to advantage. He will know, that there are many things which can be accomplished in winter as well as in summer; others, that spring, summer and autumn only are fit for; in a word, to use the wise man's saying, that "there is a time and a season for all things," and that unless they are embraced, nothing will thrive or go on smoothly. There are many sorts of *in-doors* work, which can be executed in hail, rain, or snow, as well as in sunshine; and if they are set about in fair weather, (unless there be a necessity for it,) there will be nothing to do in foul weather; the people therefore must be idle. The man of prudence and foresight will always keep these things in view and order his work accordingly, so as to suffer no waste of time, or idleness. These observations apply with equal force to frozen ground, and to ground too wet to work in, or which if worked will be injured thereby."

"Nothing but system and method are required to accomplish any reasonable requests."

"Economy in all things is as commendable in the manager, as it is beneficial and desirable to the employer. This manifests itself,

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in the taking care of the crops, that no part of the same is wasted ;— in not permitting the ploughs, harness, and other implements of husbandry, to be unnecessarily exposed, trodden under foot, run over by carts, and abused in other respects. More good is derived from attending to the minutiæ of a farm, than strikes people at first view; and examining the farm yards, fences, and looking into the fields to see that nothing is there, but what is allowed to be there, is often times the means of producing more good, or at least of avoiding more evil, than can be accomplished in any other way."

"There is much more in what is called head work, that is, in the manner of conducting business, than is generally imagined. Take two managers, and give to each the same number of laborers, and let the laborers be equal in all respects. Let both these managers rise equally early, go equally late to rest, be equally active, sober, and industrious, and yet, in the course of the year, one of them, without pushing the hands under him more than the other, shall have performed infinitely more work. To what is this owing? Why, simply to contrivance, resulting from that forethought and arrangement, which will guard against the misapplication of labor, and doing it unseasonably. In ploughing, for instance, though the field first intended for it, or in which the ploughs may actually have been at work, should from its situation, be rendered unfit (by rain or other cause) to be worked, and other spots, even though the call for them may not be so urgent, can be ploughed, this business ought to go on, because the general operation is promoted by it. So with respect to other things, and particularly carting, where nothing is more common, than, when loads are to go to a place, and others to be brought from it, though not equally necessary at the same moment, to make two trips, when one would serve. These things are only mentioned to show, that the manager, who takes a comprehensive view of this business, will throw no labor away."

The intrinsic good sense in the foregoing remarks, as well as the authority from which they come, will commend them to the favourable notice of every farmer, who is at all aware, that "Time is Money," and that he that makes the best use of the *one*, will be most likely to accumulate the *other*.

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OFFICERS

OF THE

Essex Agricultural Society,

ELECTED OCTOBER, 1829.

FREDERICK HOWES, of Salem, *President.*

EBENEZER MOSELEY, of Newburyport,
SOLOMON LOW, of Boxford,
JAMES GARDNER, of Lynn,
JAMES H. DUNCAN, of Haverhill,
} *Vice-Presidents.*

ANDREW NICHOLS, of Danvers, *Treasurer.*

JOHN W. PROCTOR, of Danvers, *Cor. and Rec. Sec'y.*

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Abijah Cheever, of Saugus.
Jonathan Ingals, of Andover.
Stephen Barker, of Andover.
Daniel Putnam, of Danvers.
Daniel Adams, of Newbury.
Henry Colman, of Salem.
Asa T. Newhall, of Lynnfield.
Jesse Putnam, of Danvers.
Stephen Abbot, of Andover.
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Richard Stewart, of Haverhill.
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Jeremiah Spafford, of Bradford.
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Hector Coffin, of Newburyport.
Francis Peabody, of Salem.
Daniel Weed, of Amesbury.
Daniel P. King, of Danvers.

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The following names, have been added to the list of Members—since the last publication.

Nathan Webster, of Haverhill.
Rufus Slocum, of Haverhill.
Richard Jaques, of Newbury.
William Ives, of Salem.
Pickering Dodge, jr. of Salem.
Enoch Silsby, of Boston.

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TRANSACTIONS

OF THE

ESSEX AGRICULTURAL SOCIETY,

FOR

1831.

VOL. II.—No. I.

PUBLISHED BY ORDER OF THE SOCIETY—MARCH, 1832.

PRESS OF FOOTE & BROWN,

SALEM, MASS.

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AN

ADDRESS

TO

THE ESSEX AGRICULTURAL SOCIETY,

DELIVERED AT ANDOVER, MASSACHUSETTS,

29TH SEPT. 1831.

AT THEIR ANNUAL CATTLE SHOW.

BY HENRY COLMAN.

PUBLISHED AT THE REQUEST OF THE SOCIETY.

GAZETTE OFFICE.

1832.

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ADDRESS.

Mr. President; and Gentlemen of the Agricultural Society;

I am not insensible to the honor of your appointment on this occasion. I should not, however, have undertaken this duty, but from the consideration that every man is bound to render any practicable service, which the community demands of him. You do not expect an oration. Agriculture has little concern with rhetorical flourishes. Determined principles, plain matters of fact, and the results of well conducted experiments are most useful. These will be the subjects of my address.

I. The first object of a farmer should be to produce as much as he can. We are not speaking of mere amateur-farmers, who do not need the products of a farm as a means of subsistence or profit; and who are at liberty to farm as much or as little as they please; nor of your mongrel farmers, a sort of "jack-at-all-trades," who farm a little, and trade a little, and manufacture a little, and jockey a good deal; but of those husbandmen, whose whole dependance is on their farms for their own and the support and comfort of their families. The object of such farmers should be to produce from their farms as much as they can, and of that which is most needed or most profitable. We lay this down as a great principle, and shall presently come to the qualifications which belong to it. Every man should obtain from his farm all that he can. This will require labor and care; but the necessity of labor and care, where they are not excessive, is a blessing, not an evil. Occupation is enjoyment. Idleness is always hazardous to virtue, and renders a man a nuisance to his neighborhood. There is a satisfaction in a farmer's gains not to be found in many of the occupations of life. The increase of his products impoverishes no other man; but confers a benefit upon the community by extending the means of human subsistence, rendering the land which he cultivates more

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fertile, and inciting others to emulate his example of good husbandry.

There are three modes of increasing the produce of the soil, within the reach of every farmer;—draining, ploughing, and manuring. I can only glance at these topics, for it is not my intention to give a treatise on agriculture.

1. First, of draining. There are extensive tracts of low and wet land in the county, enriched by the decay of their own native growth, and the copious washings of centuries from the surrounding hills, which require only to be drained to produce, instead of a worthless herbage, the best of English hay and corn. In many cases, removing the water by open or covered drains, so formed as to cut off the springs at the sides of the meadow, is all that is necessary. In other cases the addition of some firmer substance, such as sand, or gravel, or loam, is needed to give it consistency. This in general is to be found in the neighborhood, and may be placed on the meadow at a season when such labor can be easily applied. In most cases the materials for manure obtained from the ditches, and the first or the two first crops will defray the expense of the improvement.* Sand contributes to the improvement of such lands by dividing the soil into fine parts, and rendering it favorable for cultivation, and the growth of the finer grasses; both sand and gravel serve to give it firmness; but probably the best mode of managing such meadows, after being well drained, would be to invert the sod, and after rolling to cover it with a coating of good loam, mixed well with manure, to the depth of about two inches; or to apply such a covering without inverting the sod, and to sow the grass seeds immediately upon this. Some lands have been

* A successful experiment of this kind has been made by Asa T. Newhall, of Lynnfield, where at least ten acres of a sunken and useless bog have been, at a moderate expense, brought into productive English mowing. He has furnished the Committee with ample details on the subject, which will be found appended to their Report on Reclaimed Meadows. An improvement of this sort is likewise to be found on the farm of Isaac Osgood, of Andover, where by good judgment and labor, meadows of some extent have been redeemed and made productive.

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managed in this way with great advantage. A mistake is frequently made in the too copious application of sand or gravel to meadows. So much has been put on as to prevent in a great measure the benefits expected from it. Such applications do nothing towards enriching the soil; but are required only to aid in dividing, drying, and giving it firmness. Beyond what is required for these purposes, the application would be hurtful. The first object must be to lay these lands as dry as possible; and it suggests itself as an important improvement, where it is practicable, to erect a small embankment at the outlet of such meadow, with a sluice-way and gate, so that the meadow may be flooded at pleasure. Thousands of acres in this county admit of these improvements. They may be effected at an expense which, by their increased products, would be soon remunerated.

2. The next means of improving land is ploughing. We do not cultivate land enough; not nearly enough. Several farms in the county contain hundreds of acres, with not more than six or ten under the plough. This is not farming—this is only seeing how we can get along without farming; it is in fact going to sleep in the cart and leaving the cattle to find their own way. But the land, says the farmer, will not pay for cultivation;—there is some such; in general however most land will much more than pay for cultivation. But it costs labor; so does every thing else in life that is worth having. It requires manure; true! but cultivation is the great means of obtaining manure. Cultivation increases the products of the land. The more products, the more stock; the more stock, the more manure; and land in general, under generous cultivation and a frugal management of its products and manure, is capable not only of maintaining but increasing its own fertility. The great law of divine providence holds in this as in other cases, the more you do, the more you can do; to him that hath shall more be given. The late Col. Taylor of Virginia, one of the most distinguished farmers in the country, could at one time scarcely manure five acres of his land; but in eighteen years he so increased the products of his farm as to be able to manure one

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hundred and fifty from the resources of the farm itself.* This improvement was chiefly effected by the extended cultivation of Indian corn and a most careful application of the fodder or offal.—Cultivate your farm to the extent of your power of manuring and keeping it clean; and the power of manuring may by judicious management be increased to an almost indefinite extent. Land which, when it is manured, will not more than pay for the labor of cultivation, should be abandoned.

There is a material distinction between ploughing too much land and ploughing land too much. For garden-culture and tap-rooted vegetables the land cannot be in too fine tilth; but for other crops it is not so important; and the great object should be to preserve all the vegetable matter in the soil, that by fermentation and decomposition it may supply food to the growing plants. The common mode of ploughing green sward for example is to tear it in pieces in a rough and careless manner, to leave the sods loose on the surface, and then by harrowing to break them fine, and if possible, to bring all the grass and vegetable matter to the top to be exhaled by the sun and air—a more wasteful process cannot be pursued. Mr Phinney, an intelligent and practical cultivator in Lexington, Mass., had the curiosity to weigh the vegetable matter in a single foot of sward land, taken from a field, which had been mown for a number of years, the soil a light loam with a gravelly bottom, and thinly set with red top and herds grass; and found it to contain nine ounces of vegetable matter consisting of the roots and tops of the grasses; giving at this rate upwards of twelve and a quarter tons to the acre." This itself would be a very considerable manuring; but this by the usual management is entirely lost. It is therefore of the last importance in breaking up land to turn the sod as completely as it can be turned, and at a season when there is the greatest quantity of vegetable matter on the surface; to roll it that the air may be excluded; and all the benefit of the decomposition of the vegetable matter retained in the soil; and afterwards to cultivate the crop as far as possible without disturb-

* Albany Ag. Tracts, No. II. p. 56.

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ing the sod. My own authority is of little importance in the case though I have for several years practised on this system and been satisfied of its utility; but in addition to the testimony of the gentleman referred to, whose opinions are entitled to great respect, you have the experience in its favor of two as eminent farmers as the country has produced, John Lorain of Pennsylvania, and Earl Stimson of New York, who have strongly recommended it.

The depth of ploughing and the number of ploughings to be given to land are to be determined by circumstances. Ploughing is too deep when it buries all the richer parts of the soil and brings to the top only a cold and gravelly substance, unless you have manure in such abundance that you can create a new vegetable surface. Frequent ploughing in heavy and tenacious soils is useful with this caution only that it must not be done when the land is wet. Frequent ploughing injures light soils by bringing all the vegetable matter contained in them to the surface to be exhausted by the sun and air. Ploughing among growing crops is often useful in time of drought. By some well conducted experiments of John C. Curwen, an accurate observer and intelligent farmer, with glasses contrived for the purpose to ascertain the quantity of evaporation from the land, it was found to amount on the fresh ploughed ground to nine hundred and fifty pounds per hour on the surface of a statute acre, whilst on the ground unbroken, though the glass stood repeatedly for two hours at a time, there was not the least cloud upon it, which proved that no moisture then arose from the earth. The evaporation from the ploughed land was found to decrease rapidly after the first and second day and ceased after five or six days, depending on the wind and sun. These experiments were carried on for many months. The evaporation after the most abundant rains was not advanced beyond what the earth afforded on being fresh turned up."*

Few operations of husbandry among us are executed, in general, in a more slovenly way than ploughing.—The half-

* Curwen's Hints, p. 273.

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finished manner in which the sod is turned, the frequent baulks, the ragged and uneven ends of the fields, and the utter disregard of all straight lines, show the importance of our ploughing matches, which it is hoped, with the introduction of better constructed ploughs, will eventually correct these habits and introduce neatness, care and regularity, as convenient and useful in saving labor as they are agreeable in the appearance.

3. I proceed to the third operation upon the land, manuring. Manure is the great means of all successful agriculture. My remarks on this as on other topics must be brief; and will relate to matters which are not generally considered rather than to those which are familiar.

The first means of enriching the soil is that to which we have referred, that of ploughing in the vegetable matter, already on the surface. Late ploughing in the spring is doubtless preferable to early, by which means you have the advantage of the early growth of the grass.—Ploughing-in green crops, which were sowed expressly for this purpose, is another mode of enriching land, successfully tried, and warmly recommended by some persons, but it is little known among us.* It is objected by many persons that in this way you return to the land no more than what is taken from it; this would be true, if it were not that plants derive much of their support and growth from the atmosphere. Another object with every farmer, should be his compost heap. Nothing, which is susceptible of decay and so of forming manure, should be lost. There are few farms among us, which do not contain upon themselves, either by the roadside or in their meadows and swamps, the materials for forming compost manure in great abundance; and farmers will permit me to remind them that the summer and autumn are the best seasons for making this provision. The saving of liquid manure

* The Mass. Agricultural Society the last year gave a premium to Wm. Buckminster of Framingham for a successful experiment in turning in two crops of Buck Wheat to the acre, greatly to the improvement of his land. The account is given in their Repository for 1831, Vol. X. No. III.

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upon our farms is little attended to. Universally in Flanders, one of the best agricultural countries in Europe, water-tight vaults are constructed under all their stables, and their liquid manure is considered of as much or greater value than their solid manure. Such a practice among us would be of great utility; and by constructing cisterns under our stables to be filled with mud or loam, and by littering our cattle abundantly, this valuable manure which is now lost, might be turned to the best account. But the great means of obtaining manure is from consuming our produce upon the place in the form of hay or vegetables. Where this can be done, and to the extent to which it can be done, we may be sure of the means of increasing the fertility of our farms. Here we come back again to the great circle of reciprocity and mutual connexion and benefit. Increasing your products will enable you to increase your stock;—increasing your stock will increase your manure; increasing your manure will help you to increase your cultivation; increasing your cultivation will increase your products. This is the golden chain of comfort and wealth, which Divine Providence has formed, every link of which is essential to the perfection of the whole. I will remark in passing upon the application of manure. It is the opinion of many farmers that it is better to keep their stable dung until it is a year old and becomes thoroughly rotted. But this practice is condemned by the fullest experiments. Animal manure cannot be applied to the land in too fresh a state, though it would often be beneficial to mix it with other substances. "By fermentation," says Curwen, a practical farmer already quoted, "dung is reduced to one half its bulk and its quality is reduced in greater proportion. The evaporation from dung is five times as much as from earth and is equal on the surface of an acre to 5000 pounds per hour, and this is losing its most valuable gases. By making use of dung in its freshest state, the farmer may extend his cropping to one third more land with the same quantity of manure." "The experiments of Arthur Young and other practical and scientific farmers have demonstrated," says Judge Buel, as competent an authority as I can quote, "that animal and vegetable manures,

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which undergo a complete process of fermentation in the cattle yard or upon the surface of the ground, lose from 30 to 60 per cent of their fertilizing properties, and if properly spread and buried under the soil that this loss is prevented and that a decomposition does immediately take place even of dry straw sufficient to answer valuable purposes to the first crop." "Experiments show," says Mr. Young, "that every atom of vegetable matter in the soil begins to be decomposed immediately and to want no previous fermentation to enable it to feed plants." The application of fresh stable manures cannot properly be made to crops of small grain because they tend to increase too much the haulm or stalks of the plant and expose it to rot and mildew; and because the seeds of weeds will in this way be carried into the fields; but such manures may be most properly applied to hoed crops and in a sufficient quantity to prepare the ground without further applications for a crop of small grain.

II. The second great topic to which I ask your attention is the consumption of the produce upon the farm. This should be the object of every farmer. He should produce as much as he can and he should strive so to use up his produce upon his place as to have the means of increasing its productiveness.—This suggests two topics of inquiry; the kind of crops to be raised and the mode of applying them.

1. English Hay is considered among us as the great crop. The average yield cannot be rated at more than one ton and a half to the acre; a ton in the opinion of many farmers would be a more accurate estimate. This, at the prices which it has borne for several years past, can hardly be considered a valuable crop. It is the crop on which most of our farmers in the neighborhood of large towns depend for obtaining ready money. But the sale of hay from a farm is subject to serious abatements.—For every ton of hay sold from the farm, in order to preserve its fertility the farmer should return a cord of manure. This delivered at the farm cannot be rated at less than two dollars. To this you are to add the expense of marketing the hay, which in any situation is at least a dollar. A ton of hay then con-

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sumed on the farm is worth three dollars more than if sold from the place; i. e. if it bring only ten dollars in the market and by any mode of consuming it upon his place the farmer can realize that amount from it at home, he may consider it as better worth thirteen dollars on the farm than ten dollars carried from the place; or to state the case differently, it is better for the farmer to use it at home if he can there make it worth seven dollars per ton to him than to convey it any considerable distance to market and obtain ten for it. At this rate, however, and I can see no fallacy in the calculation, hay at present prices and yielding one or one and a half ton to the acre is not a profitable crop. Indeed, unless where there are extraordinary resources for obtaining manure, such as on the sea shore or in the vicinity of bog mud, the sale of hay must be considered as a wasteful kind of husbandry. It is properly speaking, in many cases, killing the hen that lays the golden egg.

Next let us compare the value of hay with other crops for the feeding of stock. An acre of hay yields one ton and a half of vegetable food; an acre of carrots or Swedish turnips will yield from ten to twenty tons; say fifteen tons, which is by no means an exaggerated estimate. Crops at the rate of twenty-five tons of carrots, and twenty-two of Swedish turnips to the acre have been raised among us, and much larger crops than these are upon record.

By an experiment it has been ascertained that three working horses fifteen and a half hands high consumed at the rate of two hundred and twenty four pounds of hay per week, or five tons one thousand five hundred and forty eight pounds of hay per year, besides twelve gallons of oats each per week or seventy eight bushels by the year. An unworked horse consumed at the rate of four and one quarter tons of hay by the year. The produce therefore of nearly six acres of land in this mode of feeding is necessary to support a working horse by the year; but half an acre of carrots at six hundred bushels to the acre with the addition of chopped straw will, while the season for their use lasts, do it as well if not better. These things do not admit of doubt; they have been subjects of accurate trial.

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It is believed that the value of a bushel of Indian Corn in straw and meal will keep a healthy horse in good condition for work a week. An acre of Indian Corn, which yields sixty bushels, will be ample for the support of a horse through the year. Now it is for the farmer to consider, whether it be better to maintain his horse upon the produce of half an acre of carrots, which can be cultivated at an expense not greatly exceeding the expense of half an acre of potatoes, or upon half an acre of ruta baga, which can be raised as a second crop at a less expense than potatoes, or upon the grain produce of an acre of Indian Corn, or, on the other hand, upon the produce of six acres in hay and grain; for six acres will hardly do more than to yield nearly six tons of hay and seventy eight bushels of oats. The same economy might be as successfully introduced into the feeding of our neat cattle. I have known a yoke of oxen engaged in the ordinary labor of a farm, to be kept three months in winter in good working condition upon one bushel of Indian meal and about twenty five cents worth of straw per week; and my own team has never been in better condition both for appearance and labor than when fed wholly upon a liberal supply of ruta baga and the coarsest fodder. But it has been ascertained by accurate measurement that an unworked ox put up on good old hay consumed at the rate of thirty three pounds per day or two hundred and thirty one pounds per week, which is upwards of six tons per year of two thousand pounds to the ton. There must then be a great saving between feeding in the way referred to or upon English hay; and English hay alone in any quantity without grain or vegetables is not sufficient for any hard working animal.

We come next to the great article of produce, the Prince of Vegetables, the bread fruit of our climate, Indian Corn. In an agricultural view that country is signally blessed, which has the capacity of producing Indian Corn. There is no crop of more simple and easy cultivation. None is subject to fewer casualties; only in a single instance for many years (the year 1816,) has the crop among us been generally cut off. There is none that yields a greater quantity of feed, or of better feed to man

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and beast; which will make more flesh; which returns so much to the land; and bears more frequent planting upon the same ground.

Crops, exceeding one hundred bushels to an acre, have been raised in this county. No farmer ought to be satisfied with a less crop than fifty bushels to the acre; and, while pork is worth six cents a pound, he may estimate his corn as equal to seventy cents per bushel. Fifty bushels to the acre then may be safely valued at thirty five dollars; and the fodder from an acre of corn if well saved will do much towards paying for the labor of cultivation. It will do more when carefully managed, than any other crop, toward supplying its own manure. I do not speak at random. Mr. W. P. Livingston, of New York, gives it as his opinion that the fodder will pay for the cultivation. Lorain of Pennsylvania obtained from an acre yielding sixty six bushels to the acre, (and the ground was planted with potatoes as well as corn,) of

	Ton.	*Cwt.*	*lbs.*	
Blades, husks and tops,	1	6	13	
Stalks or butts	1	7	00	
Total	2	13	13	gross.*

Mr. Phillips, an intelligent farmer of Pennsylvania, says, "that he is fully of opinion, that a field of good corn will yield as much fodder and contain as much nutriment as a field of the best clover of equal size."†

The saving of corn fodder ought to be much more matter of attention than it is. It is a slovenly and wasteful practice to leave our corn butts in the field to be browsed by cattle and so to serve no use as manure rather than carefully to gather and feed them out in winter in our barn yards, where what is not consumed by the stock, will go at once to increase the compost heap.

Of potatoes as a profitable crop I have great distrust. Beyond what is wanted for marketing or family use they afford

* Lorain's Husbandry, p. 201. † N. Y. Memoirs, vol. III. p. 374.

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small returns. One hundred and fifty bushels to the acre is more than an average crop throughout this county. These can hardly be rated on the farm at more than one shilling per bushel, which would be equal to twenty-five dollars, out of which the expense of four or five dollars for seed is to be deducted. For feeding beef stock it is doubtful if they should be rated so high. I have made no experiments with them in this way upon which I can rely. When steamed they are represented as excellent feed for horses. Many persons speak well of them in fattening beef; but the best grazing counties in the State do not deem them a very profitable object of culture. "To mix potatoes in the food of fattening pigs," says an English agriculturalist, "is deceptious, deteriorating the pork in exact proportion. Hence the Irish pork and bacon are generally inferior to the English, and the market price is in proportion. The inferiority was some years since stated at three ounces per pound or upwards by an eminent dealer in Irish provisions."* But after deducting the expense of seed, the labor of manuring, planting, hoeing, and gathering, which is always a troublesome business, the profits of such cultivation must be very small. They likewise return little to the ground, for the tops of potatoes can scarcely be considered as of any value.

Carrots are a more profitable crop than potatoes. This crop is of great value. "A bushel of carrots, for any stock, is equal to two-thirds of a bushel of potatoes, or of equal value weight for weight." It is little more expensive to raise six hundred bushels of carrots than two hundred of potatoes. Again, land which will produce fifty bushels of corn to the acre, will produce six hundred bushels of carrots, or twelve for one; and a New-York farmer by the name of Waring says that "two and a half or at most three bushels of carrots will make as much beef, pork, mutton, milk, or horse flesh as one bushel of corn. This seems to be an extravagant estimate; but if they will do half as much the advantage is greatly in favor of carrots.

* British Farmers' Magazine, Vol. I. p. 594.

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Of the value of English turnips I shall not say much. They are very easily raised. Cattle and sheep are very fond of them, and will thrive upon them. In Great Britain many of their cattle are entirely fattened upon them, and English beef is celebrated all over the world. Upwards of eleven hundred bushels have been raised to an acre by Mr. Featherstonhaugh of New-York, and premiums have been given in Scotland to crops of seventy-five and ninety-six tons to the Scotch acre, which is one fourth larger than ours. As a second crop they may be raised to great advantage.

The Ruta Baga is a highly valuable crop. I have raised nine hundred bushels to the acre at a less expense than the same extent of potatoes could be cultivated, and four hundred and six hundred bushels have been produced on sward land from which a crop of grass has been taken the same season. A crop of four hundred bushels to the acre was raised on a grass ley and sowed on the 18th of July; but I am inclined to believe that the best mode of culture is to raise the plants in a seed bed and transplant them either with a short stick or by running a single furrow at the distance at which it is desired the rows should be made, dropping the plants on the land side of the furrow and letting a man follow to set them up and draw the earth to them with a hoe. Where they are transplanted a much longer season is obtained, as this need not take place until the last of July or even as late as the middle of August.

They are said to be excellent food for horses; and, when steamed, valuable for swine. I know them to be of great value for oxen and all dry stock; and for cows, abating an unpleasant taste which they give to the milk; and both carrots and ruta baga may be applied with great advantage to the feeding of sheep intended for the butcher. The manure which is made from sheep or cattle fed on turnips, with their yards well littered, from the extraordinary secretions of urine which turnips produce, is of a superior quality. The value of carrots for milch cows is well understood, not increasing the quantity of milk so much as potatoes; but giving it richness and sweetness, and contributing to keep the animals in the best condition.

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It is my conviction therefore that on the extended cultivation of Indian Corn, Carrots and Ruta Baga, the Essex farmer may lay the foundation of a profitable husbandry. Of the cultivation of other crops and particularly of the smaller grains, wheat, barley, and rye, I have not time to speak. In respect to wheat, much of our land is unfavorable, probably from a deficiency of lime; and this might be remedied by the application of lime to the soil either in a crude or composite state, as it exists for example in the spent leeches of soap boilers. The prejudice generally entertained that the vicinity of barberry bushes will occasion a blast of the grain, deserves farther inquiry; as I have for the two last years had sound crops of wheat directly in their neighborhood.

2. I propose next to speak of the application of the produce of the farm.

The raising of Live Stock cannot be pursued to any great extent by the Essex farmer. The scantiness of our pastures forbids it. Yet in a small degree by producing large crops of succulent vegetables, by a careful saving of his corn-fodder and straw, and by sending his young animals to another part of the country for pasture in summer, he may at least keep his stock good and often go beyond this with advantage. Every farmer should have young stock sufficient to consume his coarse fodder; and he can often purchase stock brought from the interior at a low rate, the growth of which in this way will be more than an equivalent for their feed.

The Dairy is another object with the Essex farmer. Butter and cheese always find a ready market in the towns and villages, which are accessible to every part of the county. It should be an object with him to extend this part of his husbandry as much as possible, and to obtain a milking stock of the best qualities. This requires that his animals should be well kept. The produce of a cow in the summer will be materially affected by the manner in which she has been kept in the winter; and our scanty pastures may be greatly assisted by clearing up, draining, and the application of ashes to the surface; besides which we should find great advantage in the cultivation of green summer

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feed for our cows, such as Indian corn sown for this purpose, and especially Lucerne, which bids fair to become a valuable auxiliary to our dairy husbandry.—Essex county has the honor of having possessed some cows, whose produce has scarcely been exceeded; but we are certainly deficient in attention to the good quality of our milking stock, and from ignorance or indolence keep animals which are comparatively worthless. In a comparison of the quality of the milk of two of my own cows, in order to ascertain the proportion of cream given by each, I found in milk taken on the same day and in the same quantity and allowed to stand in the same place for the same length of time, an extraordinary difference, the milk of one giving only two tenths of an inch of cream and the other giving an inch and three tenths; and yet this inferior cow was most promising in appearance, and the most expensive cow in the yard.

Essex county has one small dairy, which presents a fine example of successful management in this branch of husbandry, not exceeded by any within my inquiries. I refer to the dairy of Mr. Jesse Curtis of Marblehead, all of native cows and most of them raised by himself.

In 1824	from	6½*	cows	he made	732	lbs. of butter.
1825		7	"	"	886	" "
1826		6	"	"	745	" "
1827		6¾	"	"	836	" "
1828		8	"	"	1272	" "
1829		7	"	"	1175	" "
1830		6	"	"	1090	" 13 oz. "

which last yield is at the rate of one hundred and eighty-one pounds to a cow, and this without any extra feed.

The next mode of consuming your produce on the place is by stall-feeding sheep, to be put up in autumn and turned off to the butcher in the spring. My own experiments in this way, though conducted under many disadvantages, have been favorable to its continuance, since it has furnished a home market for my produce at the current rates, without the trouble and loss of carrying it from the farm; and the manure has been an equivalent

* One cow for half the season.

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for the attendance. To stock of this description, carrots, ruta baga and common turnips are a valuable feed, and for this purpose may be raised to advantage. Mutton fattened in the immediate vicinity certainly deserves and will command the preference with the butchers over that which is driven a great distance, or which is brought down in a half frozen state.

Pork is another article, which even at the present low prices, may, I believe, be fattened without loss and perhaps to a very small profit; at least it furnishes a market for our produce without the trouble and expense of carrying it from the farm and leaves a valuable manure for its benefit. I need not say any thing of the important differences in the breeds of swine. Some will scarcely repay the trouble of attendance, while from an improved stock I have had a gain for weeks and months together of two pounds, two and a quarter pounds, three pounds and three and a half pounds per day. Cooked food for swine is greatly to be preferred to raw food; Indian meal is more fattening than any other feed; the growth of the first year is a much greater gain than that of any subsequent period; and I believe it is best to keep them from the first not merely in a growing but in as fat a state as we can get them.

In regard to the fattening of Beef animals, my experience has been little and that by no means encouraging. In a single experiment where an exact account was kept, it was attended with a great loss, as in general the profits in such cases go to the butcher. I have wished to make further trials; and I would express the hope that a Society, distinguished for the judicious selection of its subjects of premium, will deem it of particular importance to encourage various and exact experiments, to determine what may be profitably done in this way, and to devise other successful modes of consuming the produce of a farm so that what is carried away may not impoverish it.

Next to the importance of cooking feed for swine, and I believe it would be found of almost equal advantage for all other animals, is the cutting up of all long feed for neat cattle and horses. My own experience has been considerable in this way, and always strongly in its favor; so has that of many other persons within my knowledge; but I shall refer

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you only to the testimony of a Mr. Phillips, of Pennsylvania. He says, "I have fixed a moveable shaft upon the top of my cider mill, on which is a large drum; and with another small drum connected by a strap, the chaff cutter is worked by one horse, the fodder is cut of any size from one quarter to an inch long, and with ease from 120 to 140 bushels an hour are turned out, one boy only attending the machine. Since I have used fodder thus prepared, I have kept from twenty-six to thirty-five head of cattle, besides horses and sheep, during the winter, and have used at least ten loads of hay less than when I kept only twelve. This spring (1824) my cattle were in better order than usual."*

I owe an apology to the society for detailing my own experience and so often speaking in the first person. It would be affectation in me to pretend ignorance of an art in which I have been more or less interested and occupied for many years, and with a strong feeling of its great and essential importance to human comfort and good morals; but I am not unaware that I stand in the presence of many of much more experience and knowledge than myself; and in speaking of what I have done I am prompted by a feeling of the duty of every farmer to communicate to his brethren the results of his own experiments, whether favorable or otherwise, as the best means of advancing an art, where facts and experience are the safest instructers.

There were other topics upon which it was my wish to have remarked; but I fear I have already trespassed too much upon your patience. Agriculture cannot be looked to as a source of wealth; but money is far from being one of the greatest goods in life. Its profits under the most favored circumstances must be small and can only be secured by hard labor, persevering industry, and extreme frugality. Yet the situation of every sober and diligent farmer in our country may always be one of substantial independence. A comfortable dwelling, a sufficiency

* Memoirs of N. Y. Agriculture, vol. III. p. 374.—[I have myself tried various cutting machines; where much work is to be done, I can strongly recommend the machines invented and patented by Jonathan Eastman of Baltimore, which are now made in Boston, as the best within my knowledge.]

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of wholesome food and good clothing, the means of rearing a family, the opportunity of procuring the best education for his children, the power of gradually improving his property and condition, and of accumulating some humble resources against the time of old age and sickness, and above all the quiet and comforts and endearments of home, and the perfect enjoyment of his religious rights and privileges, are blessings as much within the reach of the industrious and honest farmer in New England as of the richest man in the world, and are sufficient to satisfy any but an inordinate avarice and ambition. The farmer's gains are honest gains. What he gets, he gets not at the expense of suffering or loss to others, but as the lawful fruits of his own industry and toil. He above all others should be a religious man; for the fruits which he gathers seem to be poured at once into his lap from the divine bounty; and the various domestic animals, which depend on his care and are to be daily fed from his hand, remind him that he is the almoner of a merciful and kind Providence. Every operation of husbandry, with all its beautiful and miraculous results, admonishes the thoughtful mind of that unseen but omnipresent and beneficent agency on which all creatures subsist; and which is every where diffusing life and happiness and good. The flowers of the field in their splendor and beauty, the birds of the air, who, though they have neither store-house nor barn, are fed by a paternal kindness, the invigorating sunshine and the fertilizing rain, the fields glistening with the enriching dew or yellow with the ripened harvest, and the cattle upon a thousand hills, all speak to the husbandman, of God, in tones which find their way at once to the feeling and pious bosom. Let his heart and life pour forth a grateful response. In the exercise of an honest industry, who can feel a juster claim to the peaceful enjoyment of its bountiful returns! The possession of these gifts of the divine goodness should remind him of his duty to those whom it gives him the power and privilege to succor and relieve. When the peace and contentment and comfort, which reign in his habitation, are thus enjoyed in charity to his fellow men and in humble piety to God, this earth presents no condition more privileged and enviable.

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REPORTS.

No. I. ON FARMS.

The Committee of the Essex Agricultural Society, on Farms, ask leave to report—

That there were three applications for the Premiums of the Society for the good management of Farms, from the following individuals:

Mathew Hooper, of Danvers.
Jesse Curtis, of Marblehead.
Jedediah H. Barker, of Andover.

The farms of these several gentlemen, were visited by your Committee in June and September; their respective accounts of their condition, cultivation, and produce, are subjoined to this report; and will be read, your Committee believe, certainly in respect to two of them, with interest and pleasure, as affording laudable examples of frugal and successful husbandry, and of industry and skill well, intelligently, and honorably applied.

The farming of Essex County is of necessity on a comparatively small scale. It contains no large plantations; and no abundant capitals to be applied to agriculture. Essex is essentially a maritime County. Commerce and Manufactures are the great and absorbing pursuits. A large proportion of our population are mechanics and manufacturers, and choose those occupations where the cash returns are liberal and quick. Many among us, it must be allowed, are living upon their wits, and in many instances excite our surprise at the profits they realize

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upon so small a capital. They prefer speculating in stock to raising stock, and are more disposed to fleece the farmer than to fleece the sheep. In a luxurious community it is natural to expect an aversion to labor; and where wealth becomes with all classes the paramount object, it is a matter of course that the small and humble gains of the farmer should be looked upon with indifference if not disgust; and a profession disdained, which however honest and satisfactory its gains may be to a humble mind, holds out no golden promises either to avarice or ambition.

The circumstances of our County likewise forbid our engaging in the production of any great staple. We can grow neither Wheat, nor Indian Corn, nor Hemp, nor Tobacco, nor raise Live Stock,—nor fatten Beef or Pork extensively. We are favored with numerous markets in the County and its vicinity; and yet there is scarcely an article, which we can produce, with which there does not come into immediate and strong competition the same article from some more favored clime. The products of the rich alluvions of the West, and the new lands of our Eastern neighbors, pouring in upon us in every direction by their numerous rivers, canals, and railways, have essentially injured our own agriculture, and diminished to an extraordinary degree the value of our lands. These circumstances, together with the increased price of labor owing to the demand for it in manufacturing establishments, or the lessening of the number of hands by emigration and commerce, very much cripple our agriculture; and put those among us, who with their families must either live or die upon their land, to their wits' end, to know how to support themselves and obtain even a humble remuneration for their labor; compel them to raise whatever will sell, and to sell whatever others will buy; and, like retail merchants, to keep a variety to suit the wants of the various customers to whom they may have access. These circumstances make our farming appear to men accustomed to agriculture on a large scale a small business; and in many cases forbid men to make it an exclusive pursuit and compel them to unite with their farming, that they may find the means to live, the laboring on hire for others, or the practice of some mechanical trade. It will not be denied on the

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other hand that these peculiar circumstances are in many respects favorable to the character of our agricultural population. They compel them to diligence, frugality, and temperance; they severely tax their industry and skill; they as it were throw them upon their own resources; under these circumstances their energies are naturally developed, and habits of extraordinary diligence and frugality are formed, as being absolutely essential to success.

The farms of Messrs. Hooper and Curtis are fair examples of this kind of husbandry, and entitle them to the honorable notice of your Society. Mr. Hooper's farm is in Danvers, owned in part by himself, but the greater part held on a lease. We need not recapitulate the facts communicated in his statement; but we begin by saying that an example of neater husbandry, both within doors and without, we believe cannot be found in the County. Every thing connected with his mechanical and agricultural establishment was in order, and his numerous inventions for facilitating and abridging the operations of his trade and farm deserve great commendation for the ingenuity of their contrivance, as well as the success of their application. His buildings and fences were in complete repair; his cultivation clean and thorough; his domestic animals of good character and in good condition; and every part of the concern indicated the attention of a vigilant and careful master. The crops of Indian Corn and Potatoes were very good for this part of the country, though the year upon the whole has been unfavorable to the yield of Potatoes. The blight upon small grains, Wheat and Rye, from which he suffered, was general; but the appearance of Mr. Hooper's fields after the crops were removed, showed the high condition in which the land had been put. The amount of dairy produce is to be considered with reference to the large number of the family to be supplied with milk, and for this purpose it would seem that at least a third part would be required. The crop of Hay was got in fine condition; the other crops of onions and carrots especially were very good for field cultivation; and the gross amount of produce, which there is reason to believe was under rather than over-stated, is highly creditable.

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Your Committee remarked with satisfaction Mr. Hooper's practice of planting at intervals among his corn several rows of potatoes, so as to afford a place for shocking his stalks and removing them at pleasure, without the necessity of carrying them by hand to a great distance where the field was large, or exposing his corn to be broken down by going among it to bring them out, when they should be fit to be carried to the barn. Your Committee likewise remarked with great pleasure Mr. Hooper's unusual attention and economical arrangements for making and saving manure; and strongly recommend his example to their brother farmers. Manure must lay at the foundation of all successful husbandry; and it is impossible to condemn too severely the apathy and negligence in this matter, which generally prevail.

Mr. Hooper, holding a large portion of his farm on a lease, has little encouragement to attempt any laborious or expensive improvements. His several manufactures afford him singular advantages in obtaining for his farming operations any additional labor which may be required on an emergency and in the busiest season of the year; and from the connexion of his mechanical and farming operations your Committee felt the difficulty, admitted by Mr. Hooper, of making a just estimate of the amount of farm labor employed, and comparing it with the land cultivated and the produce raised.

The farm of Jesse Curtis is in Marblehead, and is held on a lease of seven years, five of which have expired. Under a landlord indisposed to allow any compensation for improvements, Mr. Curtis has had no encouragement to make any; yet he has done much by his humble means to mend the condition of his place, and his fields and buildings are in neat and good order. His pasturage is excellent; and his arable and mowing land, where it is to be found among the rocks and cliffs, is of a superior quality. His opportunities for procuring sea manure are very good; but with all these advantages, the amount of his produce compared with the labor expended, and indeed the general condition of his premises, showed that his labor was judiciously applied, and indicated industry and good management. His stock,

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particularly his cows, most of which have been raised by himself, is of an excellent quality; and his dairy, for the exemplary neatness of its management and its amount of produce, is certainly not surpassed and scarcely equalled by any within the knowledge of your Committee, his cows within the present season without any extra feeding having yielded more than 169 lbs. of butter to a cow. Mr. Curtis' farming is on a comparatively small scale; his means are very limited; he is exclusively a farmer; and his husbandry affords a creditable example of economy, neatness, and well-directed industry.

Your Committee being of an opinion that their highest premium should be bestowed only in a case where farming is the exclusive object of pursuit, and pursued on a scale so extensive as to embrace all the most important branches of husbandry, and at the same time to present examples of experiments and improvements in agriculture, did not feel at liberty in either of the above cases to bestow it; and experiencing some difficulty in fairly adjusting the respective claims of these two competitors so as to give a preference to either, they decided unanimously against making any distinction between them, and voted therefore to divide the second and third premiums equally between the two claimants; which they accordingly recommend to the Society.

Your Committee visited the farm of Jedediah H. Barker, in North Andover. Feeling no disposition to censure, they owe it to themselves not to commend without just grounds of commendation. The condition of Mr. Barker's working cattle did him much credit; in other respects your Committee saw nothing in his husbandry, differing from the management of the majority of the farmers in the county, or which should in any respect entitle him to a preference over them. His returns are made with little exactness; but it is obvious that the amount of labor employed and produce obtained are small compared with the size and capabilities of his farm. It presents one of those cases too frequently to be met with, and based upon a mistaken economy, in which an attempt seems to be made to ascertain with how little labor the farm can be got along, rather than how much

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labor can be profitably applied; an error obviously incompatible with intelligent, productive and improving husbandry.

Your Committee, anxious to encourage applications for these premiums, deeming the actual exhibition of the management of particular farms one of the best modes of promoting agricultural improvement, have by a majority thought proper to award to Mr. Barker the seventh premium and accordingly recommend this result to the society; and they beg to state that they are strongly induced to this by the above consideration and the good condition of his working stock.

Your Committee have great pleasure in stating that at the hospitable invitation of Dr. Joseph Kittredge of Andover, one of their own body, they had the satisfaction of going over his grounds; and without asking his consent, they unite in their commendation of his husbandry; the neat and improved condition of his trees, fields, general cultivation and live stock; and in thanking him for the essential aid he renders to agricultural improvement by such an example.

Your Committee in closing their report unite in the conviction that the agriculture of the county is in a course of gradual improvement. They regret the small number of applications for the liberal premiums of the Society on the management of Farms; in the firm persuasion, as before stated, that no class of premiums is better adapted to promote the objects of the Society; that there is no means of agricultural improvement more efficient than that of bringing the details of individual husbandry directly before the individual himself and the agricultural public; and placing the management of different farms in direct comparison with each other. It is a false and pernicious diffidence, which, on the part of many individuals, prevents an application for these premiums; and which, to the regret of the Committee, withholds, in their opinion, many of the best managed farms in the county from observation.

Your Committee beg leave to press strongly upon the attention of their brother farmers, what still appear to be the prominent defects and faults of their husbandry; the little exactness observed in their operations; the gross neglect of farming accounts

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and journals, by which the actual results of their husbandry might be determined and recorded; the small attention paid to the preservation and the increase of manure; the great loss of animal labor to which almost every farmer subjects himself either by keeping more team than he can advantageously employ or suffering it much of the time to remain idle; the little amount of human labor expended compared to the extent of the farm, where much more might be profitably applied; the fewness of the attempts either at draining or irrigation; the neglect of providing succulent vegetable food for the winter keeping of our live stock; and lastly the slovenly and severe manner in which much of our valuable stock is carried through the winter, so as in many cases barely to sustain life.

Your Committee have no pleasure in dwelling on the defects or faults of their brethren; but they will find an ample justification for the performance of this ungrateful duty, if they can stimulate and increase the spirit of improvement every where active among us and in the highest measure useful and important to the industrious and intelligent agricultural population of the county.

MOSES NEWELL,
HENRY COLMAN,
JOSEPH KITTREDGE,
JOHN W. PROCTOR,
PAUL KENT,
ELIAS PUTNAM,
HECTOR COFFIN,
} *Committee on Farms.*

January, 1832.

MATTHEW HOOPER'S STATEMENT.

TO THE COMMITTEE ON FARMS.

Gentlemen—

I submit for your consideration such a statement of the management and produce of my farm, as is in my power to make;—not having heretofore noticed particularly the princi-

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ples upon which your premiums were offered, I have not been so particular in ascertaining facts, as I should have been, had I known what was required.

The farm under my care includes about one hundred and forty acres of land—forty acres belonging to myself—one hundred acres held under a lease from the heirs of the late Benajah Collins, Esq. It is situate near the centre of the town of Danvers, at the head of Waters river. The soil is generally good, and there is no waste land. The present year, I mowed about sixty acres, pastured about fifty acres, and cultivated about twenty-five acres. The same farm has been under my care for the last eight years.

The produce the present year, I estimate as follows :—

English hay	35	tons.
Low ground hay (of good quality)	35	tons.
Salt hay	1½	tons.
Indian Corn	650	bushels.
Potatoes	450	bushels.
Cider	2½	barrels.
Pork	2000	lbs.
Beef	5000	lbs.
Wheat	14½	bushels.
Rye	15	bushels.
Oats	85	bushels.
Butter, from April 2 to Nov. 24	603	lbs.
Cheese, new milk	440	lbs.
Onions, 3 acres	900	bushels.
Carrots, 1 acre	15	tons.
Squashes	2	tons.

Our number of cows have varied from six to ten in different parts of the season. Our family has usually consisted of from ten to fifteen persons, which together with another family of eight persons, have been supplied with milk from our dairy—which has necessarily diminished the quantity of butter and cheese.

My corn was principally raised on land that has been pastured the last thirty years; the produce varied from thirty-five to fifty-

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five bushels to the acre. The average produce of all my land planted with corn will equal forty-five bushels to the acre.

My crops of onions and carrots were cultivated and taken care of by one of my neighbors on shares—he receiving a certain proportion of the crop for his labor in attending to the same. This field of nine and a half acres, that was taken care of upon shares—myself finding manure, and receiving my part of the produce on the field—has yielded me, after allowing all charges, an income of at least fifteen dollars an acre.

I sowed three acres of wheat, and three acres of rye, on land in a fine state of cultivation; but on account of the blight generally prevalent in this vicinity the present season, the produce was very small, scarcely sufficient to pay for the labor of gathering and cleansing. We afterwards mowed on the same land, a crop of nearly a ton to the acre, of tolerable fodder for the cattle.

My oats were of very good quality, and yielded twenty-five bushels to the acre.

In addition to the crops before stated, we raised as many vegetables as were required for the supply of the family.

Manure.—I have paid much attention to increasing the quantity of manure on my place. I obtain from my barn yard, from seventy-five to one hundred loads annually; and from my pig pens, as much or more than from the barn yard;—so that the manure produced on my place is not less than one hundred and fifty cart loads annually. In addition to this I purchased the last year forty cords of lead factory manure, for which I paid one dollar a cord—and in years previous I have usually purchased some manure, though not so much as the last year.

My own attention is much divided between my farming and other business. I am a carpenter, and usually have two or more hands beside myself engaged in this business.

I have a Brick Yard on my place, in which I manufactured between two hundred and fifty and two hundred and sixty thousand of bricks the present year—the labor in the same is done at so much per thousand—all the rest of the care of the same devolves upon me.

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In addition to the stock before mentioned, we keep usually three yoke of oxen—and three horses.

In regard to the quantity of labor exclusively applied to my farm, it is not in my power to state with precision—the same persons being employed in different parts of my business, as I find most advantageous.

From the first of April to the first of December, I estimate there are engaged in farming on an average, four men and two boys—the average price for men's labor during this time is eleven dollars a month—the boys, one is ten the other fourteen years old—not hired.

In the house we usually hire two girls through the season.

That part of the land which I hire, is so situated that I am not at liberty to vary its condition, or to attempt improvements upon it. That which I own has been cultivated for a long time, and is in so good a condition as not to require any experiments for bettering the same. MATTHEW HOOPER.

—

JESSE CURTIS' STATEMENT.

TO THE TRUSTEES OF THE ESSEX AGRICULTURAL SOCIETY.

Gentlemen—

I subjoin some account of my farm. Not expecting until very late in the season to offer it for examination to the Committee, I am not able to supply as exactly as I could wish, all the details which might be desired.

The farm which I occupy is in Marblehead, and is held by me upon a lease of seven years; as no consideration is made by the landlord for improvements, I have been unable to do in this respect what I could wish. The farm is in much better condition than when I received it; but it must be my principal object to turn every thing as far, and with as little expense as possible, to immediate account.

The farm contains ninety-five acres. It is is situated at the North part of Marblehead, and is washed on the North-eastern

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side by Salem harbor. Here and at Marblehead Neck, there are often great advantages for procuring sea manure.

The pasturing is permanent, as it is for the greater part too rocky to admit of being ploughed. The feed which it produces however is of the best quality, and it is not liable to suffer much from the drought. It is divided for the present season as follows.

In Pasture,	61	acres,
" Mowing,	27	"
" Tillage,	6	"

Of the Tillage 3 acres have been in Indian corn, 2½ acres in potatoes, and ½ acre in other vegetables.

The produce of the farm the current year is as follows:—

English hay, (much of the best and all of good quality)	49	tons.
Rowen	8	tons.
Meadow or Swale hay	1	ton.
Corn	159½	bushels.
White beans	47	bushels.
Peas (in pod)	6	bushels.
Beans (")	3	bushels.
Flat turnips	40	bushels.
Potatoes	175	bushels.
Butter	1019	lbs. 12 oz.
Pork, sold,	1330	lbs. at 7 cts.
9 pigs, sold,	$ 27	00
5 calves, sold,	$ 20	00
1 lamb, sold,	$ 3	33
Cash received for pasturing stock,	$ 30	00

The stock now on the farm is as follows:—

1 Bull.
1 yoke of Oxen.
1 pair of Steers, one year old.
6 Cows.
1 Heifer.
1 Calf of last spring.
1 Horse.
2 Sheep.

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I have now on hand, as nearly as can be estimated, one hundred ox cart loads of manure. I am in the habit of covering my mowing land with sea manure, as I can obtain it.

The labor on the farm the last year has been my own time, one hired man seven months, and an additional hand for nineteen days in the haying season. My wife superintends the Dairy, assisted by a young woman in the family. The family in addition to the above produce are supplied with what milk and summer vegetables they require.

All which is respectfully submitted.

JESSE CURTIS.

Marblehead, 31*st Dec.* 1831.

JEDEDIAH H. BARKER'S STATEMENT.

TO THE COMMITTEE ON FARMS.

Gentlemen—

My farm is situated in Andover North Parish, near Boxford, and contains one hundred and forty acres. The surface is hilly, the soil shallow, and of middling quality.

I usually cultivate with corn and potatoes about five acres—with rye and oats, from four to five acres.

I usually have about twenty acres of English mowing, and fourteen acres of meadow.

I have about forty-four acres of pasturing—the remainder of my farm is wood, and unimproved land.

My crop of grass is much larger this year than it usually has been, and is nearly twice as much as was obtained from the same land eight years since, when I first came in possession of the farm. My corn is as good as it was the last year. My oats are of good quality, but not so many bushels to the acre as the last year—that crop having been about forty bushels.

There is on the farm a large number of apple trees, and in common seasons there is made from the fruit about a hundred barrels of cider, besides twenty barrels of winter apples—this season there are very few apples.

The stock on my farm usually consists of one horse, four oxen, five cows, and eight or ten young cattle, and ten sheep.

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This season I have had only four cows, and one three year old heifer till the first of August; and did not milk but four after that time.

I make about forty cords, or eighty cart loads of manure annually. This is done principally by collecting materials from meadows and ditches, and placing the same in my barn yard and hog pen.

I commonly plough up my grass land in the month of August, and cross plough it in the Spring. I plant two years in succession. The manure made in the barn yard and hog pen through the Summer, I carry into the field in the Autumn, and lay the same in heaps, to be put in the hills in the Spring. I spread from fifteen to twenty loads of my green manure to the acre, upon land intended to be laid down for grass.

The labor upon my farm is done by myself, one man, and a boy, with the addition of another man in haying. I work out with my team and earn enough, so that the labor applied to the farm, would not exceed the labor of two men through the season.

The produce of my farm the present year, as near as I can ascertain, is as follows, viz:

English hay	30	tons.
Meadow hay	14	tons.
Indian corn	143	bushels.
Potatoes	270	bushels.
White beans	2¾	bushels.
Turnips	12	bushels.
Oats	55	bushels.
Rye	9	bushels.
Cider	8	barrels.
Pork	1500	lbs.
Butter from April 1st. to Nov. 1st.	276	lbs.
Cheese—new milk	261	lbs.
" four meal'd	137	lbs.
" three "	110	lbs.

JEDEDIAH H. BARKER.

Andover, Nov. 16th, 1831.

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No. II. ON IRRIGATION OF LANDS.

The Committee on Farms, to whom was referred the subject of "Irrigation of Lands," report—

That only one entry for the premium on this subject was made; and that by David Gray, of Andover. Your Committee visited his farm, and as in previous visits were gratified with the various evidences of persevering and well-directed labor and skill; and of the full enjoyment of its proper rewards, comfort and competence. They examined his experiments in irrigation, of which his account is annexed; but although creditable to the industrious proprietor, they were not considered of a sufficiently extensive and decisive character to justify the Committee in awarding the premium.

Your Committee deem this mode of improvement of the highest advantage, and are anxious that many experiments should be made to test among us the value of a process whose utility has been so fully established in more improved countries. It has been found in many cases much more than to double the produce of lands, and has been successfully applied, not only to the improvement of grass, but to the great increase of cultivated crops, such as wheat and barley. Its value upon pasture grounds and newly mowed lands, especially during our severely dry summers, must be very great. Much has already been done among us by turning water from the sides of the roads, by which means the wash of the roads contributes much to the enriching of our fields. A good deal of advantage, as your Committee have in another report remarked, might be found in being able to flood our drained meadows at pleasure. Great advantage would doubtless arise from using the water from springs, which are to be found on some of our hills; and directing it by successive small channels formed on their sides over the contiguous grounds. The county of Essex, which cannot be said to abound in springs or brooks, does not perhaps admit of many improvements of this nature; but where there is a capacity for it, there cannot be a doubt that a successful experiment would amply compensate a liberal expenditure. In some cases several springs on neigh-

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boring hills, which are full in winter, might be turned into a common reservoir or basin, which may be formed by a small dam, and the water reserved for use in summer to great advantage.

The establishment of the Shakers at Canterbury, as enterprising, industrious, and excellent farmers as are to be found in the country, exhibits an example of this kind; where by turning several springs and small brooks into a small valley in which there was no standing water before, and which they formed into a receptacle by a dam by no means expensive, they have succeeded in obtaining a head of water, sufficient to last through the season, and which is used by successive dams and erections five times before it is suffered to pass off, in driving different kinds of agricultural and manufacturing machinery. It has occurred to your committee, that there may be situations in the county where upon a small scale water may be in the same way collected for the purposes of irrigation; and though the power of an individual to effect such improvements must be small, compared with the united efforts of such a numerous and industrious association, yet their successful experiment on so large a scale may serve to stimulate and encourage individual efforts in a humbler form, which may become proportionately conducive to private and public benefit. Pure water is a most efficient instrument of vegetation. In what way it operates it may not be easy to determine. It is happy for us, that without becoming adepts in chemical philosophy, the plainest farmer may employ with success in his operations, the most powerful agents in nature; and the reflecting mind will not fail to think often with grateful pleasure on the abundant diffusion of one of the most valuable aliments of vegetable and animal life.

MOSES NEWELL,
HENRY COLMAN,
JOSEPH KITTREDGE,
JOHN W. PROCTOR,
PAUL KENT,
ELIAS PUTNAM,
HECTOR COFFIN,

Committee on Farms.

January, 1832.

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DAVID GRAY'S STATEMENT.

TO THE COMMITTEE ON FARMS.

Gentlemen—

The farmers of Essex having been repeatedly called upon for experiments in Irrigation, or the turning of water from its natural course, so as to overflow land that would otherwise for the most part remain dry; I will detail with as much minuteness as my recollection will permit, the result of some experiments by which I have been fully compensated for my trouble.

My first experiment some eight or ten years since, satisfied me that crops on grass land might be very much improved by irrigation; and although I did not immediately apply myself to the improvement of my lands in this way, I have almost every year made some additional improvements, and although I could never make water run up hill, I have found it would run almost any other way, and have now on my farm four several pieces containing in the whole about two acres, annually manured with no other trouble than giving a few simple directions, and nature does the work and finds materials too. In the Autumn of 1828, the course of a brook was changed so as to overflow half an acre or more of upland mowing adjoining a piece of meadow, which never was plowed, being enclosed with the meadow it was mowed every year, and produced a few hundreds of inferior fodder which hardly paid for making, in fact the land seemed of but little use, but to hold the meadow and pasture together which it lay between. In 1829 the crop was but little increased in quantity, but the field presented a more green and thriving appearance, and the grass thickened at the bottom. In 1830 the crop of grass was estimated to be that of the preceding year; and the present year 1831, there was a very visible increase on the last year's crop. The water that has enriched this land is simple brook water, not having the advantage of the wash from the road or buildings; or any other source that would tend to enrich it; and the land is so situated as to be very inconvenient to get manure to it.

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I have another piece of land which was not much superior to the one above described, in quality and productiveness, it is a gravelly knoll, and has heretofore yielded one scanty crop in a year; for two years past the water has been directed so as to flash over it, generally from March till the last of May, and occasionally from showers. The present year (1831) two crops have been taken from it, either of which is double the value of what was previously raised in a season on the same ground. The improvement in the crops on this piece may in part be attributed to the advantage that this piece has over the other of taking the wash from the road and buildings. I have two other pieces, one of which has been under this mode of improvement several years; they yield an extra crop, and probably will, if attended to, as long as grass shall grow, or water flow. The expense in most cases is trifling, sometimes it may be necessary to raise the water by a dam, that it may be thrown on higher land, on which it would not run, if it were not raised above its natural channel—the water should be conveyed as far up as it will run and from the main channel at distances of ten or twelve feet, it should be let out so as to overflow the whole declivity below; a little attention to the channel and gutters is necessary, as they sometimes become obstructed and the water takes a wrong direction. I have not been able to be to particular in my statement as perhaps might be desirable, not being situated so as to have the crops weighed, but the utility of this mode of improvement will be obvious to any one who will risk the experiment.

Yours respectfully,

DAVID GRAY.

Andover, Nov. 14th, 1831.

No. III. ON RECLAIMED MEADOW.

The Committee on Farms to whom was referred the subject of "Wet Meadow Lands Reclaimed" report—

That at the request of Asa T. Newhall of Lynnfield, the only applicant the present year for the premium of the Society on reclaimed meadow, they visited his premises, and annex to

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this report his own particular account of the improvement effected.

The amount of meadow recovered exceeds ten acres; the experiment is successful and the improvement and advantages obvious; the land, which was before worthless, is now productive; the work has been accomplished at a very moderate expense, which by the produce of the land has been much more than remunerated. The whole has been effected with judgment and skill; and your Committee agree in awarding to him the premium of twenty dollars. Your Committee do not say that the experiment of Mr. Newhall is susceptible of no improvement; but it was very satisfactory. They are of opinion, that it would have been, in respect not less to convenience than utility, a great advantage, if the main ditches had been perfectly straight and the side ditches precisely at right angles with the main drain; the side ditches and the drains at the foot of the rising ground where such occur, may often times be covered to advantage; and it would be an improvement in all cases, where it is practicable, to construct at the outlet of the meadow a dam with a sluice way and gate so that the water may be retained or let off at pleasure. In all cases, where such an improvement is designed or attempted, it would be useful to have a plan of the ground previously formed with all the drains intended to be made, whether open or covered, distinctly laid down. This would be a great saving of labor in the beginning; and if, afterwards, the drains should become choked or filled up, it would render it a much easier matter to open or repair them.

An experiment in reclaiming wet and bog meadows is now being carried on in England near Liverpool, at a place called Chat-Moss, under the direction of a Mr. Reed. It is represented as being eminently successful. The particular details have not yet reached us; but it is understood to have been effected first by removing as far as practicable the water by a wide main ditch and by frequent lateral ditches at right angles with the main ditch and running into it; and then carrying on to the meadow large quantities of limestone gravel and quick lime; and afterwards cultivating it with the following course of crops; potatoes,

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wheat, oats, and clover. To the surprise of almost every one, abundant crops of wheat have been obtained on this bog meadow; and the expense of its redemption, managed with great economy, care, and judgment, has been fully compensated.

The subject of reclaimed meadows is of great importance to this County. Extensive tracts of this kind of land exist among us, which may, your Committee believe, at a reasonable expense be recovered from their present utter worthlessness and offensiveness, and made highly productive.

They recommend therefore that the attention of this Society should continue to be strongly directed to this object; and it is well worth inquiring by those, upon whom such a duty properly devolves, whether the laws of the State are such as to encourage these improvements; as whether, for example, when an individual is desirous of attempting such an improvement, there should not be a power of compelling an obstinate or indolent neighbor, upon whom he may in this case be dependant, to aid in opening and keeping free the main outlet for the water by which the meadow is flooded; and the effectual removal of which is indispensable to any great success in reclaiming it.

MOSES NEWELL,
HENRY COLMAN,
JOSEPH KITTREDGE,
JOHN W. PROCTOR,
PAUL KENT,
ELIAS PUTNAM,
HECTOR COFFIN,
} *Committee on Farms.*

January, 1832.

ASA T. NEWHALL'S STATEMENT.

TO THE COMMITTEE ON FARMS.

Gentlemen—

In presenting a statement of the experiment made of draining and rendering productive a piece of wet meadow land, a plan of which is herewith submitted,* containing in the

* There was a plan accompanying this statement, which it was not convenient to publish.

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whole about twenty acres, permit me to observe that the land herein described, could hardly be entitled to the name of meadow, as very little grass of any kind grew thereon. The place has been known by the names of Duck-pond and Lily-pond, a considerable part of which, until within a few years, has been covered with water, bushes, dogwood, and flag, the remainder with lilies. Previous to commencing draining, in a very dry season, two or three loads of very coarse water-grass, as it is generally called, have been obtained; but laborers were always averse to this part of haying, on account of wading in mud and water, and being surrounded by snakes, with which the meadow abounded; the mud was so deep, being from one to eight feet, that in a wet season, it was with difficulty a man could pass over it, and the attempt to reclaim it was thought chimerical, by my agricultural neighbors.

About ten years since, I cut a ditch through the centre of the meadow, which in a good degree, drained the water from the surface, and caused the parts adjoining the shore to be passably dry.

In the autumn of 1825 I succeeded in ploughing lot No. 1, as marked on the plan, containing one acre, a part of which was covered with bushes; 1826, planted it with potatoes, with a smaller quantity of manure than usual for upland, which grew luxuriantly; but abundant rains in August flowed the meadow and nearly destroyed the crop.

The meadow having settled nearly to a level with the bottom of the ditch, in 1827 I sunk the ditch from one to two feet, and cut several others through the meadow in different directions as marked on the plan, spread three loads of compost manure, sowed this piece with oats and grass seed, and the same has yielded all of two tons of good hay each of the four last years. One hundred bushels of leeched ashes have been spread on it since the grass seed was put in.

In 1828 I teamed on to lot No. 2, containing one acre, two hundred loads, containing from fifteen to twenty bushels each of sand and gravel in four days with two teams and three men; spread it as well as I conveniently could on the top of the sward.

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In the winter of 1829 I carried on two cords of stable manure and one hundred and fifty bushels of leeched ashes; in June following, spread the manure and harrowed in oats and grass seed. In 1830 it produced at the first crop two tons and three quarters of good English hay fit for the market; and about five hundreds of oat fodder, sown by the edge of the ditch where bushes had been dug up,—the after crop yielded about one ton.

In 1831 the crop exceeded two tons, and would undoubtedly have been greater than the preceding year, but for the grasshoppers, that previous to the mowing left the upland and collected in great numbers on this piece.

The whole expense in labor and manure on this lot, exclusive of draining and harvesting the crops, is thirty-six dollars: the oats and grass seed cost three dollars; the whole produce seven tons of hay and oats, worth in the market seventy-five dollars.

In 1828 commenced clearing the bushes from lot No. 3, containing three acres, about one third of which was covered with dogwood, lambkill, &c. on the residue of which some grass and abundance of lilies had formerly grown, but by draining had nearly disappeared; ploughed the whole as well as we were able, as the cattle could not go in the furrow.

In 1829 with about three cords of manure and two hundred and fifty bushels of leeched ashes, planted the piece with potatoes, squashes, cabbages, &c.; the crop of potatoes were not abundant, squashes and cabbages very good, pumpkins planted with the potatoes produced about thirty tons.

In 1830 covered about one acre with sand from one to two inches—spread on two acres three cords of manure and one hundred and fifty bushels leeched ashes,—sowed oats, timothy, and red-top and a small quantity of clover on one part of the piece.

In 1831, the whole piece produced eleven loads of hay of a good quality, containing not less than nine tons; that part on which the sand was put was most abundant, yielding more than three tons to the acre, as ascertained by measuring a piece of the land and weighing the hay. There was but little difference in the crops on that which was manured and that on which no manure was put when sowed.

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Lot No. 4, containing two acres and fifty two poles, on a part of which there was a growth of pine and maple, is cleared of all bushes, stumps and roots, and is in a state of forwardness for sowing.

Lot No. 5, containing an acre and eighty five poles, and Lot No. 6, containing one acre and sixty one poles, are cleared of bushes, and prepared for carting on sand.

No. 7 is in a state of nature, except the draining. No. 8 is a piece of hard bottom, over which the brook flows that runs through the meadow.

Very respectfully, your ob't servant,

ASA T. NEWHALL.

Lynnfield, Oct. 1831.

N. B. The whole number of rods of ditch is four hundred and thirty-seven, all of which was cut four feet wide and from two to three feet deep, excepting forty-seven rods, which is about two feet wide and from one to two feet deep. The whole expense of cutting the ditches was about one hundred dollars and the clearing and deepening cost about half that sum.

A. T. N.

NO. IV. ON AGRICULTURAL IMPLEMENTS.

The Committee on Farms to whom was referred the subject of Agricultural Implements, report—

That there were presented for examination by Jacob Wiley of Lynn, a pair of boots or shoes for horses made of wood and leather; and designed to buckle upon the foot that the animal might walk without sinking upon the salt marsh, so as to enable the farmer by putting a temporary and very broad rim upon the wheels of a common cart, to bring off the hay, which he would otherwise be obliged to carry on poles by hand, or leave in stack upon the meadows until the season permitted him to go for it on the ice. The object in some parts of the country is of great importance; and the Committee having had satisfactory testimony that these shoes answered a valuable purpose, agreed to

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award to Mr. Wiley a gratuity of three dollars. How far he is to be considered as the original inventor and in what respects they admit of being improved, your Committee are unable to determine. Shoes of a somewhat different construction, but seen by some of your Committee to serve the purpose well, were the last season used on the Lynn Marshes, with great advantage to the farmers engaged in securing hay; but as this is the first year within the knowledge of your Committee, when any such contrivance has been used, and Mr. Wiley's shoes or boots having been found useful, the Committee deemed them deserving of their notice.

Salt Hay when well cured is a very valuable feed for neat cattle and horses, and may be fairly considered as equivalent in value to more than one half of the same amount of English hay; and the salt meadows requiring no manuring and demanding no other improvement than that of cutting and keeping clear numerous drains, and filling up the pond holes with what is obtained from the ditches, will be always highly appreciated by the farmers in their neighborhood. Salt hay taken directly from the marshes and spread upon grass ground is by many intelligent farmers pronounced equal to the best stable manure applied to the same purpose, and for this object alone, in the neighborhood of the Lynn Marshes, several practical men consider it as worth five dollars per ton. A mixture of this feed with English hay is conducive to the health of the animals fed upon it; and is proved to be as agreeable as it is nutritious by the avidity with which they seize upon it. The importance of thoroughly draining such meadows deserves to be much insisted upon as by actual experiment the crop by such means will be more than doubled; and a better kind of grass than is otherwise found is likely to be brought in.

It has occurred to some of your Committee that a cheap and moveable rail way, with a carriage adapted to it, to be drawn by men, might often on these marshes be used to great advantage; and since this suggestion, intelligence has been received, that such an invention has actually been brought into use in England, for the purpose of conveying marl or manure on deep bog mead-

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ows; "the rail way used is said to be so exceedingly portable that a sufficient quantity of rail way to furnish a means of conveying the marl or manure on to one acre, can be removed to the next acre at a cost of two shillings, and without losing a moment's time."* The form of this machinery is not described, but the knowledge of the fact itself may excite the invention of some ingenious men, to prepare something for our purpose equally convenient and useful.

Our agricultural tools still admit of great improvement. Much has already been gained. The plough, that first of all agricultural implements, has received within a few years various changes, which have been highly beneficial in facilitating its operation; diminishing the power necessary to its draft; and enabling the ploughman to make much better and neater work. Other implements of husbandry admit of like amelioration and deserve the attention of ingenious and practical men. Your Committee state, on the authority of one of their number, that the revolving horse rake lately introduced into this part of the country from Pennsylvania proves a most valuable invention; that a trial of one season has much exceeded his expectations of its utility; and that on smooth land, a man with one horse, will rake as much hay and do it in as clean a manner as six men can do in an equal time with the common hand rakes. This rake is a patented instrument, and its cost is considerably enhanced by this circumstance; but the saving of labor on a large farm will soon defray its expense.

Your Committee have likewise the pleasure on the authority of one of the most intelligent and largest farmers in the State of New York, in no way concerned in the invention of the instrument, of announcing the construction of a mowing machine, which, by his own trial, is capable on smooth ground with one horse and man, of mowing neatly and closely ten acres per day, and this where the grass was very much lodged. A hay-spreading machine is likewise in the progress of construction, whose utility if successful, must be great. Agriculture hitherto, com-

* British Farmer's Magazine for Nov. 1831. p 471.

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pared with manufactures and the mechanic arts, has derived little advantage from labor-saving machines. The farmer is literally compelled to get his bread by the sweat of his brow; and whatever invention may contribute to abridge his toil and enable him at less expense to extend his productions must be welcome to himself; by multiplying the means of human subsistence and comfort will prove beneficial to the community; and encourage the laborious farmer with the hope of keeping in sight in his own art, the best of all arts, though at a humble distance, of the other rapidly advancing inventions of civilized life.

MOSES NEWELL,
HENRY COLMAN,
JOSEPH KITTREDGE,
JOHN W. PROCTOR,
PAUL KENT,
ELIAS PUTNAM,
HECTOR COFFIN,
} *Committee on Farms.*

January, 1832.

No. V. ON MILCH COWS AND HEIFERS.

The Committee on Milch Cows and Heifers beg leave to report—

That they regard the improvement of the Dairy Stock of the County as an object of the highest importance, since the produce of the Dairy must be always a considerable article with the farmers of Essex, who are in the neighborhood of markets where butter and cheese command a ready sale.

The Committee believe that great improvement in our milking stock may be effected. The laws of nature are uniform, and as there is a tendency in every species of animals to transmit their peculiar and constitutional qualities to their offspring, there cannot be a doubt that the extraordinary property which some animals possess of making large secretions of rich milk may by skill and care become the characteristic property and distinction of a whole race. The obvious improvements, which have been

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made in the breeds of horses, sheep, swine, and beef animals, give the best reason to hope for as great improvement, in the character of our dairy stock. Such improvements clearly demand extraordinary skill, judgment, experience and perseverance, and cannot be accomplished but after a length of time.

Your Committee regret that few systematic attempts for effecting this object on an extended scale have come within their knowledge. No better mode for promoting it on the part of the Society suggests itself to your Committee than to encourage by liberal premiums every deserving effort towards this object; such is the exhibition of cows distinguished for their product, the introduction and retaining of them in the County, the rearing of the calves, the liberal feeding of these animals, which is indispensable to their growth and vigor; and the requiring, in respect to bulls presented for the premiums of this Society, not only good size, form, and appearance, but evidence that they are descended from a good milking stock; since it is plain that these improvements, if carried to any extent, will depend as much on the character of the bull as the cow.

Your Committee in reference to this stock consider two inquiries as mainly important; first as to the quantity, second as to the quality of their produce. The length of time between her calvings, during which a cow may be kept in milk, depends more upon the manner in which she is fed and milked, especially with her first calf, than upon any constitutional predisposition or capacity. The quality of the milk of a cow is supposed by many persons to bear an inverse proportion to the quantity given by her, but this is not invariable. In respect to the same animal it is certain, that at a season when she gives the largest quantity of milk, its quality for producing cream will be inferior to what it is when the quantity is diminished; but it is by no means as certain, that the larger the quantity of milk given by any cow, the poorer its quality; on the contrary, instances are known in which cows have given milk both in the greatest abundance and of the richest kind. The quality of the milk depends, in some measure on the nature of the food, the length of time the

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cow has been in milk, and the season of the year; but it is in a great degree matter of constitution, some cows giving milk of which butter cannot be made, and others giving milk the cream of which needs scarcely a revolution of the churn to produce the finest butter. Experiments made with reference to this point by one of your Committee, have shown a difference in cows of equally promising appearance, and giving like quantities of milk, and fed in the same pasture, as great as 13 to 2. The improvement to be sought for therefore is both in quantity and quality. The Holderness stock has been always celebrated for extraordinary quantities of milk; the Alderney for the superior richness of their milk. It is reasonable to believe, that a valuable improvement might be effected by crossing the finest animals of two such kinds with each other.

Your Committee with a view to furnish some standard for their own estimation of the value of animals which might be presented to them, and to excite a spirit of just emulation, where emulation cannot fail to do good, and to show at the same time what improvements may yet be hoped for, have been at the pains to collect some facts, which they beg leave to state.

They have obtained from some of the principal milk farmers in the neighborhood of Salem their estimation of the average amount yielded by each cow in their establishments during the time they are in milk. Ichabod Nichols, whose farm is on the Turnpike, where forty cows are kept, estimates it at five quarts per day. E. Patterson on the Howes farm in Beverly, where fifty cows are kept, at five quarts per day. Erastus Ware, with an establishment of fifty cows on the Pickman farm, at four quarts per day. These statements agree with those made by some of the milk men in the vicinity of Boston. Mr. Nichols feeds regularly in winter with vegetables, (preferring potatoes in a raw state to other vegetables,) and Indian meal with the best of English Hay. Mr. Patterson it is believed does the same. Mr. Ware besides hay, with some vegetables and brewer's grain; but is of an opinion that the increased quantity of the milk will not compensate for the increased expense of the feed, and therefore that he should be a loser by high feeding. Mr. Nichols is

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of an opinion that he can at any time increase the milk of his cows in the proportion of eight to five by increasing their allowance of potatoes and meal.—These quantities, however, upon the whole, appear to your Committee small. A cow owned by John Barr in Salem, which took a premium in Brighton in 1822, gave in 274 days 2965½ quarts, and in 268 days in 1823,—2923 quarts which is at the rate of more than 10⅔ quarts per day. A cow owned by a Mr. Sanderson at Waltham is stated to have given in the last year 1140 gallons which is at the rate of 12 46-365 quarts per day. Curwen in England, in his milk establishment of twenty three cows, speaks of two winter cows averaging 14½ quarts of milk per day from January to May, and that three summer ones averaged sixteen quarts each per day from May to November, six months. This was wine measure. Harley, at his famous Dairy in Glasgow where a hundred cows were kept, an establishment which was the admiration of the whole country, says that he had one cow, which for a considerable time gave forty quarts per day and was milked three times per day, and he had a number of other fine cows, which when newly calved and highly fed, produced from twenty five to thirty quarts per day, (wine measure probably.)

The Rev. Henry Berry has furnished an account of the produce of the cows of I. Whitaker near Greenholme, Eng.—They have given and give twice a day as follows:

	gall's	*qts.*
Yellow Rose, at three years old,	4	2
Same " at four years old,	4	3
Red Daisy,	4	0
Magdalene, upwards of	4	0
Wildair,	4	0
Western Lady,	3	2
Venus, 16 years old,	3	1
Alfrede,	3	0
Adela, first calf,	3	0
Yam,	3	0
Moss Rose, at all times, a moving mountain of flesh,	2	0

All wine measure.

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All these your Committee consider as well-attested facts and of a very extraordinary character. The last gentleman has made the breeding of animals his business for years, and has particularly aimed at procuring a superior dairy stock, in which it must be admitted he has succeeded in a most extraordinary degree. Other animals of a very superior milking character in our own country might be referred to, but it is not deemed necessary.

The quality of milk, as your Committee have observed, varies to a great extent. A gallon of milk is the proportion for a pound of cheese, but the quality of the cheese must vary with the quality of the milk. The quantity of milk required for a pound of butter fluctuates between wide limits. Mr. Kent of Kent Island has obtained a pound of butter in the autumn when his cows have been long in milk from five or six quarts. Mr. Moses Newell of West Newbury has been as fortunate. These were beer quarts. This is a small proportion of milk and it would be desirable to know the particular circumstances of the cows, their feed, and the management of the milk. Curwen has found it to vary (and something depended on the kind of food given) from eight to nine, eleven, and fifteen quarts (wine measure) to a pound of butter. These facts show a very great difference in the quality of the milk of different cows and at different seasons.

The famous Cramp Cow in England made six hundred and seventy-five pounds of butter in a year. The Oakes Cow owned in Danvers in one week made nineteen and a quarter pounds, and for three months together upwards of sixteen pounds per week. The Nourse Cow owned in Salem is said to have made twenty pounds in one week and upwards of fourteen pounds per week for four months. A cow imported by John Hare Powell in Pennsylvania, who is entitled to the highest credit for his enterprise and liberal expenditures in order to introduce the valuable stock of Improved Durham Short Horns into the country, made at the rate of upwards of twenty pounds per week. A native heifer, two years old, presented by Ladd Haseltine of Haverhill last year for exhibition at the Cattle Show of this Society and with her first calf, made at the rate of fifteen pounds of butter per week; and a cow owned by Samuel Henshaw of Springfield,

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Mass. from a native cow and sired by a bull of the Improved Durham Short-Horn Stock, made at the rate of seventeen and three-quarters pounds of butter per week the last summer upon grass feed only. Jesse Putnam of Danvers by very liberal feeding has obtained from four cows of our native stock upwards of two hundred pounds of butter each in a season; and Jesse Curtis of Marblehead from cows of our native stock and with no extra feed whatever has obtained at the rate of one hundred and eighty-one pounds each per season.

Your Committee refer to these well-attested facts with great interest and pleasure, as showing what may be hoped for by judicious, intelligent, persevering and systematic attempts to improve the dairy stock of our country; in the hope of exciting a much greater attention to the subject among our farmers; and in the firm belief that any distinguished improvements among ourselves in this most important branch of husbandry, besides the honest satisfaction with which such success must be attended, will amply remunerate the expense and essentially advance the interest of the fortunate agent in effecting it.

Your Committee will now proceed to award the premiums offered on this occasion, and in this duty, which is always more or less difficult, if they are unfortunate enough to err, they can only say they have been faithful to their own best judgment.

There were nine milch cows exhibited for premium. The Committee are unanimous in awarding the first premium of fifteen dollars to Samuel Noah of Danvers for his cow of native stock.

This cow is nine years old and was raised in Wenham in this county. She calved the 28th of April last; and in the one hundred and forty-eight days succeeding the 2d of May she yielded six thousand and fifty-four and a half pounds of milk measuring five hundred and eighty-seven and one-eighth gallons, which is more than four gallons per day. The most she has given in one week has been three hundred and forty-three pounds. One quart of milk (beer measure) weighs two pounds nine and a quarter ounces. She has had no extraordinary feed. She has been kept in a good pasture, and has had some green corn-stalks

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at night since they were fit to be cut. As her owner sold the milk, her butter qualities have not been tried, which the Committee regret, as in the just estimation of the value of a cow, it is material to consider the quality as well as quantity of her milk.

Your Committee award the second premium of ten dollars to Isaac Osgood of Andover for his cow. She is nine years old; and without any extra feed has given seventeen quarts of milk in a day and produced fifty pounds of butter in the month of June. Mr. Osgood is entitled to much credit for his attention to the improvement of his neat stock.

Your Committee award the third premium of five dollars to John Torrey of Newbury for his cow, nine years old. Her appearance was rather ordinary; but her produce good, having given upon very moderate keeping nearly eight quarts per day, and enabling her owner, who represents himself as a poor man, to realize by the sale of her milk a handsome profit.

As an example of good management we deem it proper to subjoin the owner's account in his own form—

"The statement I now make is from the 5th February, 1831, to the present time, and the average mess per day has been eight quarts lacking not quite a gill. Her calf was killed about the first of February.

Keeping.

Half a ton of salt hay - - - - - - - -	$ 2 00	
45 bushels of small grain, at 4½d. - -	2 87	
Stalks and suckers from 195 rods of land, excepting about half a load of dry stalks not given her yet - - - -	3 00	
One bushel of potatoes - - - - - - -	20	
		——8 01
Pasturing from 25th Aug. to the present time		1 00
		$ 9 01

Not being able to obtain a pasture she was kept up until the 25th August, a great part of the time to her disadvantage.

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Milk sold since Feb. 5—six quarts one pint per day for 236 days, 383½ gallons, at 16 cents per gallon	$ 61 36
Keeping	9 01
	$ 52 35

Newbury, Sept. 28, 1831."

Josiah G. Tyler of Bradford offered the same valuable cow which last year received the second premium of the Society as a milch cow. Having received the second premium on that occasion she was disqualified for any but the first premium or this, for which another was preferred. This cow since the first of April has produced as per the owner's account, one hundred and fifty four and three-quarter pounds of butter; and in the second week in June, seven days, she yielded one hundred and twenty six quarts of milk, beer measure, equal to an average of eighteen quarts per day for that time.

There were no heifers in milk, which came within the conditions on which the premiums of the society were offered. There were several promising heifers presented, which were not in milk.

A heifer, three years old, which brought her first calf the first of July, belonging to Ralph H. Chandler, and now giving from eight to nine quarts per day, though of a small sized breed, is in the opinion of the Committee deserving of the notice of the Society; and they recommend a gratuity of four dollars to the owner.

For a very likely heifer belonging to Ebenezer Jenkins of Andover, in milk about five weeks, your Committee recommend a gratuity of three dollars.

For a promising heifer belonging to Samuel Hood of Topsfield, sixteen months old, your Committee recommend a gratuity of two dollars.

Your Committee have to regret that in respect to several animals in the pens no person was present to give an account;

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and in regard to some, that the account given was neither so full nor particular as is in such cases to be desired.

HENRY COLMAN,
JEREMIAH COLMAN,
DANIEL PUTNAM,
WM. P. ENDICOTT,
} *Committee on Milch Cows and Heifers.*

Andover, Sept. 29th, 1831.

No. VI. ON THE DAIRY.

The Committee on claims for the premiums offered for *Butter* and *Cheese*, have attended to this duty, and report—

That there were seven parcels of butter exhibited by the following persons, viz.

Ralph H. Chandler of Andover.
William P. Endicott of Danvers.
Jacob Osgood of Andover.
Margaret Wardwell of Andover.
Stephen Abbott of Andover.
Betsey Parker of Bradford.
Edward Tappan, Jr. of Newburyport.

The parcels exhibited by the three first mentioned persons came within the rules prescribed by the Trustees—the others did not exhibit a sufficient quantity.

Your Committee have awarded to

William P. Endicott,	1st	premium,	12 dollars.
Jacob Osgood,	2d	"	10 dollars.
Ralph H. Chandler,	3d	"	8 dollars.

Your Committee recommend the following gratuities to be given, to

Margaret Wardwell, five dollars—she having made more butter in the same time than either of the others.

Betsey Parker's small sample of butter was considered by the Committee superior to any other offered,

Mr. Abbot's butter was of good quality.

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Mr. Tappan's was good, but new and fresh.

No cheese was exhibited, coming within the rules prescribed.

Respectfully submitted.

H. CLARK, *per order.*

JACOB OSGOOD'S STATEMENT.

TO THE COMMITTEE ON THE DAIRY.

Gentlemen,

I submit to your examination a brief account of the butter and cheese we made the present year, from April 1st to September 28th.

Butter made	in April	54 lbs.
"	in May	70
"	in June	158
"	in September	75
		357 lbs.

The weight of new milk cheese made in July and August, 610 lbs.

The weight of four meal cheese made during the time of making butter, 240 lbs.

The process of making and preserving the butter and cheese is the same as that in my former statement.

The above quantity of butter and cheese was made from the milk of ten cows, but on account of their coming in at different times have not received the benefit of more than nine. The greatest part of the time we calculate on having used the milk of two cows for family use. There has been no alteration in their winter or summer keeping. The cows are the same with the addition of one year.

Respectfully yours,

JACOB OSGOOD.

Andover, Sept. 28th, 1831

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R. H. CHANDLER'S STATEMENT.

TO THE COMMITTEE ON THE DAIRY.

Gentlemen—

The following is an account of the produce of butter made from five cows, from the 1st of June to the 9th of July inclusive. There is one hundred and seventy-six pounds in four firkins which I offer to your notice.

Mode of making butter.—The milk is kept up stairs when the weather will admit. We do not allow the milk to stand any longer before the cream is separated than the milk is sweet. We churn twice a week. The butter is worked more times or less until the butter-milk is all separated; then it is put in the firkins as solid as it can be; when the firkin is full we take pains to keep the air from it as much as possible. The present season we put on a cloth dipped in melted butter, and then made the cover as tight as we could.

The ages of the cows are 2, 12, 1, 6, 2, 5 years, all native breed. Their winter keeping is meadow hay the fore part, and English the latter part. We gave them the last spring, from 1st of April till towards the last of May, one pint of cob meal each a day. As our pasturing is rather scant for the number of cows we keep, our practice has commonly been to give them some hay through the season; but as the feed was better the present season than usual, we gave them but a little hay. We have taken much pains to get firkins that will keep butter best. Ash is as good as any we find. The Stock belongs to Rev. Abiel Abbott and myself.

All which is respectfully submitted.

RALPH H. CHANDLER.

Andover, (N. P.) Sept. 29th, 1831.

MARGARET WARDWELL'S STATEMENT.

TO THE COMMITTEE ON THE DAIRY.

Gentlemen,

I offer for your examination a specimen of butter. One jar was filled in June—the other in September.

We have nine cows,—all of native breed, and from five to fifteen years old.

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From the 1st of June to the 9th of July, I made three hundred pounds of butter.

I have made this season eight hundred and forty eight pounds of butter, and five hundred and fifty pounds of cheese. I put down two hundred pounds in June and July, which I should have exhibited, had it not been that the scarcity of butter the month past, induced me to part with it.

We have had fourteen persons in the family through the season, who have used milk freely; and we have sold milk to four other families. Our cows have had no feed, but common pasturing. I annex a specification of the *times* and *quantities* in which the butter was made, which is attested to, by those who assisted in making it. MARGARET WARDWELL.

Andover (S. P.) Sept. 1831.

SPECIFICATION.

1831.

April	16	6 lbs.	May	31	14½ lbs.	July	18	10¾ lbs.
	21	8½ "	June	1	15 "		21	14½ "
	25	7½ "		4	12¼ "		26	8 "
	27	6½ "		6	14¼ "		30	16 "
May	2	9¼ "		8	15½ "	Aug.	3	15 "
	4	11¼ "		10	16¼ "		8	9 "
	6	11½ "		13	16½ "		12	12 "
	7	13½ "		15	17¼ "		20	10½ "
	10	12 "		17	16 "		25	6 "
	11	12½ "		20	16½ "		30	10½ "
	13	12 "		22	27 "	Sept.	3	14¾ "
	14	12½ "		25	15 "		6	14 "
	16	14 "		27	15 "		9	14¼ "
	18	14¼ "		29	16 "		12	14 "
	20	14½ "	July	1	15 "		14	16½ "
	23	13 "		4	14 "		16	13½ "
	24	11½ "		5	16 "		19	17½ "
	26	14½ "		6	15 "		23	14 "
	28	17¼ "		8	15 "		26	14 "
	30	13¾ "		9	14 "		27	14½ "
							28	7 "

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No. VII. ON DOMESTIC MANUFACTURES.

The Committee on Domestic Manufactures have attended to the duties assigned them, and offer the following report :—

The Committee were gratified with the exhibition of the articles of domestic manufacture, although they regret that in number and variety it did not equal that of the last year.

The Committee recommend to the Society to award the following premiums and gratuities.

To Rebecca Moody of Newbury, for 25 yards of carpeting, 1st premium, - - - - - 5 dollars.

To Mrs. Stephen Abbott of Andover, for 25 yards of carpeting, 2d premium, - - - - 3 dollars.

To Mrs. Daniel Johnson, Haverhill, for 20 yards carpeting, 3d premium, - - - - - 3 dollars.

To Mrs. Maria Titcomb, Byfield, for carpeting, a gratuity of - - - - - - - - 1 dollar.

To Mrs. Samuel Pecker, of Haverhill, for carpeting, a gratuity of - - - - - - - - 1 dollar,

To Miss Hannah Foster, of Andover, for a straw bonnet, 1st premium, - - - - - - 3 dollars.

To R. K. Symonds, of Boxford, for a straw bonnet, 2d premium, - - - - - - 2 dollars.

To Miss Susanna Mills, of Salem, for a palm leaf hat, a gratuity of - - - - - - 2 dollars.

To Mrs. Walker, of Andover, for a hearth rug, 1st premium, - - - - - - - 3 dollars.

To Mrs. Fox, of Newburyport, for a hearth rug, a premium of - - - - - - - - 2 dollars.

To Catharine B. Lunt, of Salem, for 2 hearth rugs, a gratuity of - - - - - - 1 dollar.

To Joanna Adams, of Newbury, for 2 hearth rugs, a gratuity of - - - - - - - - 1 dollar.

To Howard & Co. of Andover, for 46 yards superior flannel, a gratuity of - - - - - - 4 dollars.

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Several pieces of very handsome flannel were exhibited by Mr. Stevens, of Andover, not offered for premium.

To Mrs. Stephen Abbott, of Andover, for 4 pairs woollen hose, a premium, - - - - - 1 dollar.

To Mrs. Judith Pettengill, of Methuen, for a very handsome pair of stockings, knit by her when 100 years of age, a gratuity, - - - - - 2 dollars.

To Lucy Osgood, of Andover, for a piece of linen cloth, a gratuity of - - - - - 2 dollars.

To Martha L. Gray, of Andover, for a counterpane, a premium, - - - - - - - 4 dollars.

To Mrs. Daniel Johnson, of Haverhill for a coverlid, a gratuity of - - - - - - 1 dollar.

To Edna Lunt, of Newbury, for a handsome lace veil, a premium, - - - - - - 3 dollars.

To A. M. Long, of Newburyport, for a lace veil, a premium, - - - - - - 2 dollars.

To Susannah Hutchinson, of Danvers, for a lace veil, a premium, - - - - - - 1 dollar.

To Miss C. D. Lunt, of Salem, for a lace veil, a gratuity of - - - - - - 1 dollar.

To Susan M. Low, of Andover, for a cap and veil, a gratuity of - - - - - - 2 dollars.

To Adeline and Cecilia Poor, of Methuen, for 2 veils, a gratuity of - - - - - - 1 dollar.

To Eunice Hutchinson, of Danvers, for a lace cap, a gratuity of - - - - - - - 2 dollars.

To Mehitable P. Wardwell of Andover, for a veil, a gratuity of - - - - - - 1 dollar.

To Mary M. Kimball, of Andover, aged 12 years, for several specimens of skill and industry, a premium, - - - - - - - 3 dollars.

To Elizabeth Valpey of Andover, 5 years old, for specimens of skill and industry, 2d premium, 2 dollars.

To Margaret Wardwell, of Andover, 10 years of age, for specimens of skill and industry, a gratuity of - - - - - - - 1 dollar.

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To Harriet L. Stevens, of Andover, for do. 1 dollar.
To Mary S. Bennet, of Danvers, for handsome specimens of needle work, a gratuity of - - 1 dollar.
To Mary Valpey, of Salem, for a handsome cape made of feathers, a gratuity of - - - 1 dollar.
To M. J. and E. M. Kidder, for crickets wrought on rug canvass, a gratuity of - - 1 dollar.
To Mrs. Dorcas Abbott, of Andover, for a coverlid, a gratuity of - - - - - - 1 dollar.
To Mary Ann Durant, of Andover, aged 12 years, for a veil, cap and map, - - - 2 dollars.
To William Johnson jun. of Andover, for specimens of raw silk thread and cocoons, - - - 2 dollars.
To Enoch Boynton, of Newbury, for specimens of raw silk, cocoons, thread and mits, - 3 dollars.

There were several other articles of utility as well as some of mere ornament which added to the interest of the occasion. And the Committee hope, as the design of the Society becomes better understood and its usefulness appreciated, that the artists and manufacturers of the county, as well as the farmers, with their wives and daughters, will feel a greater interest in bringing forward, at future exhibitions, specimens of their ingenuity and industry.

By order. GARDNER B. PERRY.

No. VIII. ON CIDER.

The Committee on Cider report—that they had hoped the liberal premiums offered by the Society for cider would have led to much greater competition, and that this article would have been exhibited to the Committee of a superior quality; but in this expectation they have been disappointed. All the cider offered for premium was of an ordinary quality, nor was there any thing peculiar in the manner of making or preserving to recommend it. As the Society have offered premiums for cider of a superior quality only, the Committee do not feel themselves

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authorized to award any thing in the character of premiums; but as several years have elapsed without any premium having been awarded to the competitors, the Committee would recommend gratuities in the present case, in the expectation, that our farmers may be encouraged to pay more attention to this subject, and be led to exhibit to the Society better samples of their cider. The Committee recommend the following gratuities,—

To John Gole of Boxford - - - - 5 dollars.
" Messrs. Kidder and Swift of Andover 3 dollars.
" John Foster of Andover - - - - 1 dollar.
" Daniel Foster of Andover - - - 1 dollar.

It is a matter of some surprise that in a part of the country, where fruit of an excellent quality is so abundant as in the County of Essex, there should not be more attention paid to the manufacture of cider. As a common beverage it is one of the most pleasant and healthful which our country affords, and might easily be made a source of great profit. It is stated on good authority that in the town of Orange, in the State of New Jersey, which contains a population of about four thousand inhabitants, there are manufactured and sold, on an average, twenty thousand barrels of cider, annually, at the rate of about five dollars per barrel, giving about one hundred thousand dollars receipts for this single article. If, to the farmer, this produce of his orchard can afford both pleasure and profit, to the philanthropist it must be a subject of no less importance, as substituting a pleasant and healthful beverage in the place of that bane of morals and prosperity, the use of ardent spirits.

EBENEZER MOSELEY, *per order.*

Sept. 29, 1831.

No. IX. ON THE CULTIVATION OF POTATOES.

The Committee appointed to award premiums on the best conducted experiments in raising potatoes, have attended to that service, and report—

That six specimens were presented for their examination, three of which only came within the rule prescribed to the Committee for awarding premiums.

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Having duly considered the several claims, they have awarded as follows, viz.

To Capt. Richard Jaques of Newbury, the Society's highest premium of seven dollars, for the best conducted experiment, in raising potatoes on land exceeding one half acre.

To Mr. Samuel Gray of Andover, the highest premium of seven dollars for the best conducted experiment, in raising potatoes from the seed of the apple, they being of the second year's growth, and in quantity as required by the rules of the Society.

To Mr. Silas Follansbee of West Newbury, the second premium of five dollars for the second best experiment in raising potatoes from the seed of the apple, they being of the second year's growth, and in quantity as required by the rules of the Society.

Your Committee recommend a gratuity of three dollars to Mr. James Locke of Andover, for his experiment in raising potatoes from the seed of the apple, being four and a half bushels from the seed of two balls. The potatoes raised by Mr. Locke were of a very superior quality.

They also recommend a gratuity of one dollar each, to Asa T. Newhall of Lynnfield, and Moses French of Salisbury, for their specimens of potatoes raised from the seed of the balls.

DAVID GRAY, *per order.*

Andover, Sept. 29, 1831.

There were two specimens of sweet potatoes exhibited, one by Daniel Putnam of Danvers, which were of a superior quality; the other by Jonathan Bradley of Andover.

RICHARD JAQUES' STATEMENT.

TO THE COMMITTEE ON EXPERIMENTS IN THE RAISING OF POTATOES.

Gentlemen—

I submit to your consideration the following account of a lot of land planted with potatoes in the season of 1831, the

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parcel of ground contained eighty-six rods. The land was sowed with wheat in 1830, without manure, and yielded at the rate of twenty-four bushels to an acre. The land was ploughed soon after the wheat was taken off. In 1831, May 16, the land was ploughed seven inches deep, and harrowed, and planted the 17th and 18th, in rows or drills, fifteen rods long, with two kinds of potatoes.

About five cords of coarse manure were used.

	I. *White Potatoes.*	*bushels.*
No. 1.	Small potatoes, one foot apart, under manure,	$7\frac{1}{4}$
2.	Middling size, " "	$6\frac{5}{8}$
3.	Large, cut, "	$6\frac{3}{4}$
4.	Small, on manure,	$7\frac{1}{4}$
5.	Middling, do.	$8\frac{3}{8}$
6.	Large, cut,	$8\frac{1}{2}$
		—$44\frac{3}{4}$
	II. *Chenangoes.*	
7.	Small potatoes, under manure,	$7\frac{1}{4}$
8.	Middling size, "	$7\frac{3}{4}$
9.	Large, cut, "	$7\frac{1}{2}$
10.	Small, on the manure,	$7\frac{3}{8}$
11.	Middling, "	$7\frac{1}{2}$
12.	Large, cut,	$8\frac{3}{4}$
		—$45\frac{3}{4}$
	III. *Chenango Double Drills, on Manure.*	
13.	Small potatoes, rows 9 inches apart, potatoes 18 inches,	$10\frac{3}{8}$
14.	Middling size potatoes, " "	11
15.	Large " cut, " "	$8\frac{7}{8}$
		—$31\frac{1}{4}$
	IV. *White Potatoes, Double Drills, on Manure.*	
16.	Small potatoes, rows 9 inches apart, potatoes 18 inches,	10
17.	Middling size, " "	$9\frac{5}{8}$
18.	Large potatoes, cut, "	11

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V. *White Potatoes, in Hills, on Manure.*

19. Small potatoes, 3 in a hill, $9\frac{3}{8}$
20. Middling size, 2 in a hill, $8\frac{3}{8}$
21. Large potatoes, cut, 3 pieces in a hill, $10\frac{1}{2}$

—$28\frac{1}{4}$

VI. *Chenagoes, in Hills, on Manure.*

22. Small potatoes, 3 in a hill, $8\frac{7}{8}$
23. Middling size, 2 in a hill, $9\frac{3}{4}$
24. Large potatoes, cut, $8\frac{1}{2}$

—$27\frac{1}{8}$

VII. *Chenangoes, Manure ploughed in.*

25. Small potatoes, one foot apart in the row, $8\frac{1}{8}$
26. Middling size, do. $9\frac{1}{8}$
27. Large cut, do. 8

—$25\frac{1}{4}$

VIII. *White Potatoes, Manure ploughed in.*

28. Small potatoes, one foot apart in the row, $7\frac{1}{2}$
29. Middling size, do. $7\frac{7}{8}$
30. Large cut, do. 8

—$23\frac{3}{8}$

Whole number, $255\frac{3}{8}$ bushels.

The single drills were two feet nine inches apart, the double drills four feet, the hills three feet 6 inches apart.

The potatoes from the small white seed were not so large, but more numerous. Those from the hills and where the manure was ploughed in were of the best size.

Newbury, Sept. 29th, 1831.

RICHARD JAQUES.

SAMUEL GRAY'S STATEMENT.

TO THE COMMITTEE ON EXPERIMENTS IN THE RAISING OF POTATOES.

Gentlemen,—

I exhibit for your inspection six sorts of Potatoes, the second year from the seeds or balls. The balls were gathered in the Autumn of 1829, the seeds were separated,

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dried, and the succeeding Spring sowed in the garden in a bed in drills three feet square, and cultivated like garden vegetables. They continued to grow till checked by the frost, when they were gathered. The three feet square of ground produced three and a half quarts, varying from the size of a pea, to that of a pigeon's egg. In the Spring of 1831, being overlooked, they were not planted till the 30th of May; the several kinds were planted by themselves and cultivated in the usual way; the three and half quarts of seed were planted in forty hills and produced four bushels, an average of a bushel to ten hills, more than three-fourths of which were were of a size suitable for cooking. As to their quality and time of ripening, I am at present unable to decide, although several of the kinds cook very well. I think they will require another planting to ascertain their full size, quality, productiveness and time of ripening, as the tops were green and flourishing when they were gathered, which was Sept. 21st. Nos. 1, 2, and 3 yield well, are of a good size and quality. I think No. 1 will prove to be an early potato when come to maturity. No. 5 has a yellow appearance when cooked. Nos. 4 and 6 are not so promising in shape. Some of the smallest were selected and planted by themselves. The result was, they produced small potatoes. I noticed when gathering the present crop, that some of the potatoes had sprouted and showed signs of vegetating, while the tops continued green and growing. I can account for this only that the time of sprouting indicated the season that the potato will ripen when come to maturity, but not having attained their full size the tops continued to grow, while the potato, uneasy in its too long confinement, was about giving notice of the time of its emancipation by sending up another crop of shoots. I am unable to say from what kind or kinds of potatoes the balls were taken, but with one or two exceptions they are unlike any raised on the farm from which the balls were selected. I think the next crop will be of a larger size and better quality.

Yours, respectfully,

SAMUEL GRAY.

Andover, Sept. 27, 1831.

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JAMES LOCKE'S STATEMENT.

TO THE COMMITTEE OF THE AGRICULTURAL SOCIETY ON POTATOES.

Gentlemen—

I hereby present a statement of an experiment on raising potatoes from the balls.

In the season of 1830 I raised 6 lbs. potatoes from the balls. May 6th, 1831, planted the said 6 lbs. potatoes on a piece of land 21 feet by 19—8 rows in drill, which produced as follows:

First	2 rows	80	lbs.	potatoes
Second	2 "	64	"	"
Third	2 "	68	"	"
Fourth	2 "	80	"	"
	Total	292	lbs.	

a specimen of which is herewith exhibited.

JAMES LOCKE.

Andover, Sept. 29, 1831.

No. X. ON WORKING OXEN AND STEERS.

The Committee appointed to examine the Working Oxen and Steers entered for premium, have attended to that duty, and report—

That the Exhibition of working cattle has been highly satisfactory and pleasing. The number of animals of this description far exceeded those of any former year, and their quality was of the first order. Among the number exhibited, there were only *ten pair* that were tried in the drawing of loads. The short time in the power of the Committee to devote to these experiments, necessarily renders this mode of trial very imperfect. The Committee also noticed particularly the manner in which the cattle performed their task in the ploughing field; and in making up their judgment as to the comparative merits of the

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cattle, they take into view their whole performance, both in the ploughing field, and in drawing and managing the loaded wagon at the Hill, and their general appearance.

The Committee were unanimous in the opinion, that the first premium of *ten* dollars, should be awarded for the oxen of Isaac Osgood, Esq. of Andover.

They were of the opinion that the second premium of *five* dollars should be awarded for the oxen of Moses Pettengill of Topsfield.

But it was not so easy to determine how the second premium should be awarded as the first. The cattle owned by Dr. Nichols of Danvers, Valpy & Richardson, and George French, of Andover, all performed their task extremely well, and all so nearly equal, as to render it difficult to distinguish which should have the preference.

The number of pairs of steers entered for premiums, was larger than heretofore.

The Committee noticed three pair of four years old, six pair of three years old, three pair of two years old. No premiums were offered for steers of four years old, other than those for working oxen generally.

The Committee have awarded—

To Richard Heath, of W. Newbury, for 3 years old Steers,
1st premium, $10

To William P. Endicott, of Danvers, for do. do.
2d premium, $5

To William P. Endicott, for 2 years old Steers,
1st premium $5

The steers owned by Mr. J. H. Barker of Andover, were noticed by the Committee as being of very good quality.

The Committee also noticed the team of about one hundred and fifty yoke of working oxen, brought together by the farmers of Andover, and were much pleased with their appearance. It was indeed a *Cattle Show.* Such exhibitions have been common in some of the neighboring counties, but have not often been in Essex. The Committee think the citizens of Andover deserving much credit, for this part of the Exhibition—and

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wherever the Show may hereafter be, they would be pleased to see something of the kind repeated.

Per order of the Committee.

STEPHEN BARKER, *Chairman.*

Sept. 29th, 1831.

No. XI. ON PLOUGHING WITH SINGLE TEAMS.

The committee, consisting of Erastus Ware, John Northend, Jonathan Ingalls, Daniel Johnson, and John Preston, to whom was assigned the Ploughing Match with one yoke of Oxen, Report—

That the land to be ploughed was divided into lots of about one third of an acre each.

There were five teams entered; but three came on to the work. They used Pike's improved plough, which did the work very well, considering the stubbornness of the land, both for stones and hard sward. The teams moved slow, necessarily, as the shortness of time being no object in comparison with good work. The ploughing was to be not less than five inches in depth, and flat furrows. Under these regulations the first lot was ploughed in one hour and thirty-seven minutes, the other two in two hours.

The committee unanimously agree to award the

1st premium (E. Peasly, ploughman) to Andrew Nichols, of Danvers, $10 00

2d premium, (Wm. Frye, ploughman) to Joseph Kittredge, of Andover, $8 00

3d premium, (Washington Winslow, ploughman) to John Pike, of Danvers, $6 00

Per order, ERASTUS WARE.

Andover, Sept. 29th, 1831.

No. XII. ON PLOUGHING WITH DOUBLE TEAMS.

The Committee on Ploughing with Double Teams, have attended to that duty, and ask leave to report—

That nine teams were entered for premium; eight only ap-

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peared on the ground, and performed the work in the following manner, viz:

No. 1. Hobart Clark, of Andover, one hour twenty-three minutes, 20 furrows.

No. 2. Stephen Abbott, of Andover, one hour twenty-eight minutes, 20 furrows.

No. 3. Perley Tapley, of Danvers, one hour thirty-seven minutes, 26 furrows.

No. 4. Ralph H. Chandler, Andover, one hour twenty-eight minutes, 22 furrows.

No. 5. J. H. Barker, Andover, one hour seventeen minutes, 24 furrows.

No. 6. Moses Pettengill, Topsfield, one hour forty-two minutes, 25 furrows.

No. 7. Abijah Northey, Boxford, one hour twenty-one minutes, 24 furrows.

No. 8. John Adams, Andover, one hour five minutes, 23 furrows.

The work was so well performed by all the claimants, considering the situation of the land and quality of the soil, that the Committee would have found some difficulty in deciding, had not some failed in turning the last furrow. But after consultation, they were unanimous in the opinion that the premiums be awarded in the following manner, viz:

1st premium to Ralph H. Chandler, of Andover, $12 00

2d premium to Abijah Northey, of Boxford, $10 00

3d premium, Jedediah H. Barker, of Andover, $8 00

4th premium, Moses Pettengill, of Topsfield, $6 00

All which is respectfully submitted.

DANIEL ADAMS, 3d.

No. XIII. ON BULLS.

There were presented for premium thirteen Bulls, most of them indicating thrift and care.

Your Committee, after due consideration, award

To Joseph Poor, of Andover, the first premium, $15 00

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To Samuel Jenkins, of Andover, the second premium, $10 00
To Joseph Symonds, of Boxford, the third premium, $5 00

The others were offered by Ralph H. Chandler, Moses Newell, William P. Endicott, Jesse Putnam, Ladd Haseltine, Stephen Tucker, Jacob Farnum, and Harrison W. Spofford.

Your Committee are of opinion that the Bulls in the pens were of a superior quality, but they are not at liberty to award more than three premiums.

JOHN ADAMS.

Sept. 29th, 1831.

XIV. ON SWINE.

The Committee have examined the Swine exhibited, and report—

That the animals presented were not equal to some former collections in the County.

The Committee recommend that there be awarded to Pierson & Gordon, the second premium of three dollars for a boar—there being no one exhibited worthy of the first premium.

They award to Pickering Dodge, Jr., of Salem, the first premium of five dollars for a breeding sow; and the second premium, of three dollars, for pigs.

They award to George French, 2d, of Andover, the first premium, of six dollars, for pigs.

Considering the value of this animal to the farmer, in various points of view, and the very great difference in their quality; and the manifest advantage to be derived from care in the selection of the best breeds of swine, the Committee cannot but be astonished, that so many of our farmers should be so indifferent and inattentive to a subject so intimately connected with their interest.

There have several times been fine exhibitions of swine at our shows, and the Committee confidently hope they shall again have the pleasure of seeing such.

Gentlemen who have animals of the best breeds should bring them forward; and even if they are not paid in *dollars and*

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cents, they will find an ample reward, in the benefits they confer upon their neighbors, by showing them the difference between such animals, and those *lank, raw-boned, long-shanked creatures*, too often to be found about our farmers' premises.

PAUL KENT.

Andover, September 29, 1831.

DR. SPOFFORD'S ESSAY ON IRRIGATION.

TO THE SECRETARY OF THE ESSEX AGRICULTURAL SOCIETY.

I feel that some apology is due to the Trustees for my long delay in fulfilling the appointment with which I was honored by them at their meeting in September, 1830: and have only to say that it was occasioned by a desire to obtain from a friend, then at a distance, some account of an experiment on a larger scale than any other which has come to my knowledge in this part of the country.

Some degree of knowledge of what constitutes the food of plants, seems indispensable to any well conducted system of producing them in the greatest perfection; and such knowledge seems most likely to be obtained by minutely examining their structure, and carefully observing the manner of their growth.

Plants constitute one of the great divisions of organic life, and one formed or constituted by systems of fibres and vessels, and endowed with certain powers and appetences which place them at a greater remove above unorganized matter, than they are below animal life; and appropriate nourishment is elaborated and a complete circulation carried on to the minutest extremity in a manner extremely analogous to the circulation which is carried on in the arteries and veins of the most perfect animals; and the apparent intelligence with which plants seek for nourishment, light, air, and support, appears in some instances to bear a strong resemblance to perception and knowledge: and the circulation of fluids in the vessels of plants and animals appears to be

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carried on much on the same principles, and is perfectly involuntary in both.

The indispensable agency of *water*, in constituting the fluids, and carrying on the circulation in these systems of vessels, has been universally acknowledged; and could not be overlooked by the most careless observer, while he saw innumerable instances in which plants wither and dry for want of this substance. But while this universal agency has been acknowledged, it is believed that a very inferior office has been assigned to it, from that which it really performs. It has been considered as the mere vehicle which carried and deposited the nutritious particles of other substances, while it in reality was contributing much the largest portion of the actual nourishment to the plants, which annually clothe our earth in living green.

If this idea is correct, then he who possesses water at his command with which to supply his plants at pleasure, or who has a soil adapted to attract and retain moisture, in suitable quantities, possesses a mine of inexhaustible wealth, from which he can draw at pleasure, in proportion to his industry and his wants.

In proof of the abstract principle that water constitutes in a very large proportion the food of plants, I may be allowed to mention one or two accurate experiments of distinguished philosophers upon the subject, which appear to me to be quite decisive on the case.

"Mr. Boyle dried in an oven, a quantity of earth proper for vegetation, and after carefully weighing it, planted in it the seed of a gourd; he watered it with pure rain water, and it produced a plant which weighed fourteen pounds, though the earth producing it had suffered no sensible diminution."

"A willow tree was planted by Van Helmont in a pot containing a thousand pounds of earth. This plant was watered with distilled water or pure rain water; and the vessel so covered as to exclude all solid matter. At the end of five years, upon taking out the plant, he found it had increased in weight 119 pounds, though the earth had lost only two ounces of its original weight."

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The experiments of Mr. Cavendish and Dr. Priestley have sufficiently proved that vegetables have the power of decomposing water and converting it into such fluids as they need for circulation in their own vessels; and that they elaborate from this substance, such juices and fruits as they are by nature calculated to produce.

The great effect which is so frequently observed to follow the formation of ditches from the road-sides on to mowing ground, is no doubt in part to be attributed to the manure which is thereby washed on to the ground, but is also in part owing to the more copious supply of water which it thereby receives.

That pure water is capable of producing similar effects I have the following experiments to prove.

Several years ago when resident with my father on his farm at Rowley, I labored hard to divert a stream, which fell into a miry swamp, from its usual course across a piece of dry upland. The stream was pure spring water, which issued between the hills about fifty rods above, running but just far enough to acquire the temperature of the atmosphere, but without receiving any more fertilizing quality than was obtained in passing through a pasture, in a rocky channel; the effect, however, was to double the quantity of grass. The same stream I again diverted from its course about forty rods below, after it had filtered through a piece of swamp or meadow ground, and with the same effect: and again still lower down its course, I succeeded in turning it on to a piece of high peat meadow which had usually produced but very little of any thing, and the effect was that more than double of the quantity of grass was produced, and that of a much better quality. I was led to this latter experiment by observing that a strip of meadow which naturally received the water of this run, and over which it spread for several rods in width without any particular channel, was annually much more productive than any other part of the meadow.

But the best experiment, and on the largest scale of any which I have known, was made by my late father-in-law, Dea. Eleazer Spofford, then resident at Jaffrey, N. H. A letter from Rev. Luke A. Spofford, in answer to my inquiry on this subject,

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observes: "My father commenced the experiment as early as the year 1800, and continued it till 1820, or to the time when he sold his farm. The last ten years of this time he flashed perhaps twenty acres; and it produced I should think twice as much in common seasons, and three times as much in dry seasons, as it would have done without watering. This land would hold out to yield a good crop twice as long as other land of the same quality"—(that is, I presume, without flowing.) "In dry weather he watered it every night—and the produce was good, *very good.*"

I am acquainted with the lot of land which was the subject of this experiment. It is a northern declivity, and rather a light and sandy soil, on the eastern bank of Contookook river; and the water used was that of the river—about one mile below its formation by the junction of two streams, one from a large pond of several hundred acres in Rindge, and the other a mountain stream, formed by innumerable springs issuing from the skirts of the Monadnock.

From the foregoing premises may we not conclude that water performs a more important office in the growth and formation of plants than has generally been supposed—and that it not only serves to convey nourishment, but that it is itself elaborated into nourishment, and thereby constitutes the solid substance; and we may further conclude, that every farmer should survey his premises and turn those streams which now are often useless or hurtful, on to lands where they are capable of diffusing fertility, abundance, and wealth.

It appears further that the immense fertility of Egypt is not so much owing to the alluvial deposit, brought down by the annual inundation, as to the canals and reservoirs in which the waters are retained, to be spread over the lands during the succeeding drought, at the will of the cultivator.

If, according to the experiments of Boyle and Van Helmont, almost the whole food of plants is derived from water, then the principal use of the various manures is to attract moisture and stimulate the roots of plants to absorb and elaborate it: and we have also reason to think that lands are much more injured and

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impoverished by naked exposure to heat and wind, and washing by water that runs off and is lost, than it is by producing abundant crops.

In the present state of population, nothing more could be expected or desired than that every farmer should make use of such means as the small streams in his vicinity may afford; but in a densely peopled country, like Egypt in former ages, or China at present, it should doubtless be one of the first enterprises of a good government, to take our large rivers above their falls and turn them off into canals for the benefit of agriculture.

JEREMIAH SPOFFORD.

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DIRECTIONS

FOR

THE CULTURE OF SILK, &c.

By the Committee on that subject.

In the prosperity of agriculturists the whole community are deeply interested. Whatever increases their profits, encourages their hearts, and stimulates their industry, adds more than any thing else to the permanent wealth of the nation. Every true friend of his country, must wish to see farmers better rewarded for their labour than they for several years past have been. It would seem that to effect this object, recourse must be had to the production of other commodities, in addition to such as are now generally grown in this county. At present, nothing seems to promise better than the culture of silk. For many centuries past this article has well rewarded its producers. And there is no probability, that the present or future generations, will hold it in less esteem. Like gold it possesses an intrinsic value, and will never cease to be in demand. Nothing yet discovered can supply its place, and there is no probability that any other article will ever supersede its use. The cultivation of white mulberry trees and the rearing of silk worms has enriched every people who have with patience and perseverance devoted a judicious portion of their labour to it. Can it fail to bestow like blessings on the free and industrious citizens of this Commonwealth? Farmers of Essex, can you longer hesitate? White mulberry trees, seed, and eggs, together with the necessary directions for managing the whole business, are now within your reach. Nor need the reward be so distant as you may at first suppose; a great many small trees will produce as much food for the worms as a few large ones. An acre of

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ground planted in rows four feet asunder, the trees being set about one foot apart in the rows, would probably produce as many leaves in the third, fourth, or fifth year of their growth, as the acre covered with standard trees one and a half rods apart. As the trees increase in size, they may be thinned out.

The natural history of the silk worm is an interesting study, and will in itself reward the labour necessarily bestowed upon it, by those who would successfully manage these wonderful insects. This employment cannot fail to be an excellent school for young minds. So much depends on order, cleanliness and accuracy of management, that it must deeply impress on them the value of these virtues in all the concerns of life. The introduction of the silk culture among us, may, we think, also subserve the higher interests of morality and benevolence—by adding to the charms of rural scenery and to the delights of rural employments. Were it admissible to enliven a dull agricultural essay with a picture drawn from imagination, we should be tempted to portray young men and maidens, as gay and as true to love and duty as the birds which fill with melody the mulberry grove, making by their mutual aid and kind offices the culture of silk a most fascinating and delightful employment. As we contemplate the subject, the creations of fancy assume all the characteristics of real life. We see the bashful swain with downcast eye and palpitating heart, hand over the leaves which he has gathered to the *fair* manager of the laboratory, who receives with blushes the raw material, which is perhaps to be wrought by her own hands into some ornamental part of her own wedding garment. Again, we see the charms of rustic beauty heightened by the consciousness of independence, which beams from her countenance, when she looks on the proceeds of her own industry, and seems to say, 'I have not added to the embarrassments of my father's house, and shall be able to carry that which is better than *gold*, economy, health and industrious habits, into my husband's.

It is desirable that the culture of silk should become among us the incidental employment of females, boys and infirm people. Almost every family might rear a few thousand worms advanta-

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geously. No buildings constructed expressly for the purpose will be necessary. "I have reared them with success, says Cobb in his Manual, recently published agreeably to a resolve of the Commonwealth, in a barn, in my cellar kitchen, and other rooms of my dwelling house, and in the lower story of the Tremont House in Boston. It was found in France that the cocoons brought to market by the peasants, raised in hovels so full of cracks as easily to be seen through and to admit the air freely, were richer and heavier than those reared in palaces and in the confined rooms of dwellings in cities." A well lighted dry, warm, airy room, is, however, to be preferred. An open fire place is desirable—for it not only serves at all times as a good ventilator, but in cold days, and even during warm, calm, sultry weather, a little fire may be occasionally kindled with advantage—on cold days to warm the room, and on warm, sultry occasions to remove the stagnant air and excessive moisture. In Europe their laboratories are furnished with stoves and the heat regulated by a thermometer. This, Cobb and others who have had much experience in rearing silk worms in this country, consider unnecessary. A uniform temperature of about 73 degrees of Fahrenheit is thought to be most favorable to perfect success. Greater heat, especially if accompanied with a damp, sultry atmosphere, produces sickness, and if it occurs near the completion of their growth a coarser product. The finest and most valuable silk, as well as the largest quantity, is produced by the most healthy worms, during fine weather of the temperature above named. Hence a climate as cold at least as ours, we have been told by a silk manufacturer from Spain, is most favorable to the production of fine silk. The inferiority of Spanish silk to that of some other parts of Europe he attributed to the greater warmth of the Spanish climate.

Natural History of the Silk Worm.—The phalena moth or silk butterfly is about an inch long and nearly an inch and a half between the extremities of its wings when extended. The body is obscurely white and thickly covered with short hairs—it has two antennæ or feelers, and four transparent wings of the color of the body, flat and incapable of dilatation or contraction; it

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has two black convex eyes, placed on each side of the head, rising above it rather more than a hemisphere. When examined with a microscope, these eyes prove to be of the most wonderful and admirable structure—each eye is composed of about three thousand six sided lenses as clear as crystal. The female is larger than the male, and is otherwise marked somewhat different from the male. The male performs all the duties of its life within forty-eight hours after he escapes from the cocoon, and dies a few days afterwards. The female lays from two to five hundred eggs within forty-eight hours, and soon dies also. The butterfly takes no food, but devotes its whole strength and life to the propagation of its species. Wonderful insect! Its six thousand optic lenses sparkle with a transitory lustre,—its nerves, most exquisitely strung, thrill with delight a few hours only,—it dies! but leaves the world a rich legacy. The care of this legacy—the management of its eggs, now demands our attention.

The Eggs.—The eggs are of a small size. When first laid they are of a pale yellow color, but in three or four days turn to a dull, brownish, slate color. Those which remain yellow, have not been fecundated and are worthless. The most proper place for keeping the eggs until they are wanted for hatching, is a cool, dry cellar—in a tight box to protect them from mice and insects. The heat of the place in which eggs are kept must not exceed 65 degrees,—a temperature above this hatches them. Nor, it is said in books, must they be kept in a temperature below 32 degrees, "for if they should freeze, the principle of life would be destroyed." But can this be true? "I saw," says Cobb, "at Philadelphia, a few worms which were raised from eggs laid on the outside of a brick wall, in a northern exposure, which had stood all the severity of winter," 1831.

Hatching, &c.—The season for hatching the silk worm is said by European authors to be as soon as the mulberry puts forth its leaves. This is doubtless the best rule where the worms are to be fed from full-grown standard trees. But where the leaves are to be stript from young trees, standing either in nurseries or plantations, it will be well to wait a few weeks longer—until the more vigorous growth of these trees be-

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gins to throw out lateral branches and suckers, which may be taken with less injury to the tree. All things being ready, bring the eggs from the cool depository in which they have been kept, into a room, where the temperature or heat is constantly above 65 degrees. They will begin to hatch in from six to twelve days, according to the mean degree of heat to which they are exposed. Cobb says, "they hatch in a day or two after the exposure." The writer of this essay hatched them the last season in six, seven and eight days—during very hot weather in July. Perhaps a different length of time or quantity of heat may be required to hatch different parcels of eggs—according to the different degrees of heat or cold to which they have been exposed during the preceding winter, or to something else in the previous management of them not well understood. Be this as it may, the eggs should be watched daily, and as soon as the worms begin to appear, strew over them tender mulberry leaves, to which they will immediately betake themselves. Take hold of the leaves carefully and remove them to the shelves, on which they are to be kept. It is important to economical management, to know exactly the number of worms. This is the best time to count them—mark the number on each leaf as removed and thereafter keep a journal of deaths as correctly as possible. In very large establishments the number of worms is estimated by the weight of the eggs. An ounce of good eggs produces about 35,000. The worms hatched on one day should be kept together and separate from those hatched on any other day, that they may pass through their several changes or moultings at nearly the same time.

Moultings, &c.—There are several varieties of silk worms. The most common change their skins four different times, viz. on the fourth or fifth day after hatching, on the eighth or ninth, on the thirteenth or fourteenth, and on the twenty-second or twenty-third days. These changes are called moultings, and the intervening times, ages. The fifth or last age continues about twelve days, when they cease to eat and prepare to form the cocoons. Thus 32 days intervene between the hatching and the formation of the cocoon. The several ages, however,

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may be protracted by cold or other bad weather, or by irregular or scanty feeding. I have known, says Cobb, the period retarded to sixty days. These changes should be noticed. When about to change their skins, they hold up their heads and appear to sleep. As this condition approaches they eat but little and should be fed accordingly. As soon as the change is completed, they become active and voracious.

Apparatus, &c.—The worms being hatched suitable tables or shelves must be prepared for their reception. These should be so constructed and placed, that birds, fowls, rats, mice, spiders and ants, cannot gain access to them. To prevent this, nail lathes across the windows and let the shelves be supported on small posts or legs which rats and mice cannot climb, besmeared with tar or other substance, over which spiders and ants cannot pass, and placed in the middle of the room. These shelves may be made of rough or planed boards, covered with paper, or what is better, of wicker-work,—that is, a frame filled with small rods, (about one quarter of an inch apart,) these to allow the free circulation of air and permit the litter and excrements to fall through to a sliding shelf placed below it. By this apparatus nearly all the filth may be cleared away without disturbing the worms. Care must be taken, however, while the worms are small, not to throw them away with the litter, as some of them may fall through with it. The most simple and best contrived shelves, are low tables with legs about a foot long at the corners, set one upon another. In making these tables the lower one should be about six inches longer and broader than the one next above it, so as to break the fall of such worms as happen to tumble down. A square foot will afford sufficient space for fifty full grown worms. In the first age the worms will require only one-twentieth of this space, in the second age one-tenth, in the third one-fifth, and in the fourth one-half. The mean width of the shelves should be about two and a half feet, of any length that will admit of a free passage around them.

Food, &c.—Mulberry leaves are said to consist of five different substances. 1st, the solid fibrous substance: 2d, the coloring matter: 3d, water: 4th, a sweet mucilaginous or sac-

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charine substance: 5th, a peculiar resinous substance, of which the silk is formed.

The saccharine matter nourishes the insect and forms its animal substance. The resinous matter, assimilated in the silk vessels of the worm, forms the silk. Other leaves, besides the mulberry, such as lettuce, dandelion, rose leaves, &c. possess a similar saccharine matter, and silk worms it is said may be fed on them for two or three weeks with success—but in the last age mulberry leaves are indispensable. Although the worm grows well on other food, the silk vessels are not filled with the peculiar resin, and no silk can be produced. From this fact, and from the examination of mulberry bark, which contains numerous fibres, closely resembling in strength and appearance silk, we have been led to believe, that the silk substance exists ready formed in the mulberry; and that the silk worm is only a skilful manufacturer who perhaps adds to it an animal gluten which in some measure modifies its qualities, and spins it into threads. If this be the case, it will be in vain to search longer for a substitute for the mulberry, in any other vegetable, which does not possess similar silk like fibres in its structure. The leaves of the black mulberry are said by some writers to be more nutritious than the white, although worms fed altogether on them will not make so much good silk, as when fed during the last age on the white mulberry. The Chinese mulberry, if we may believe the accounts given of it, is superior to all others for the silk culture. A few of these trees are now cultivated in several nurseries in this country and probably may be rapidly multiplied by grafting or budding. Young, tender, succulent leaves are most suitable for worms in their first ages. In the last, full grown leaves of the oldest trees are to be preferred, as these contain the largest quantity of the silk resin. In the last age no change should be made in the kind or quality of the food. The leaves should always, when possible, be picked in fair weather, after the dew has evaporated; wet leaves are very injurious to the worms. Hence it is necessary to keep on hand sufficient leaves for three or four days, gathered and preserved in a covered glazed or tin vessel, in which they may be kept perfectly sweet

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and fresh, provided they are taken out and exposed to the air a few minutes daily. Another resource is dried mulberry leaves, reduced to powder, and when used slightly moistened with water. Young worms are said to eat this preparation with avidity. If so it would be very economical to gather most of the leaves remaining on the trees just before the frosts of Autumn. At this time, little or no injury is done trees by stripping them of their foliage. Let the leaves gathered at this time be dried in the sun and pressed into cakes in the manner Shakers preserve medicinal herbs, and reduce them to powder the following season when wanted for use.

Feeding, and management generally.—The appetite of silk worms is somewhat affected by the weather and other circumstances which vary in different cases. The quantity of food therefore required for each day cannot be precisely determined. It must be however of some use to know the quantity of leaves required during each age, as nearly as possible, so that no waste be made by gathering more leaves at once than will be wanted during the time in which they can be preserved fresh. We accordingly find, in European manuals, directions as to the precise quantity of leaves, by weight, which is to be given every day, from the hatching of the worms until they form their cocoons. One of their tabular statements of the daily proceedings in the culture of silk, we shall annex, believing that although it may not always be necessary or best to follow it in every particular, that it will serve as a valuable guide to the inexperienced in this new employment. Printed on a separate sheet it may be detached from the book and posted up in the laboratory, or room where the silk worms are kept.

The worms must be kept clean. During the first age, although it will be proper to spread sheets of paper—old newspapers will answer—over the shelves composed of wicker-work, to prevent the little creatures from falling through and getting lost with the litter. They will need cleaning only twice.

The litter is to be taken away in the following manner. Scatter some fresh leaves over one quarter or one half of the shelf—to these the worms readily attach themselves. These

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leaves with the worms adhering to them, are then to be carefully taken up and removed to a clean place. Then clear away the litter from that portion of the shelf, and remove to it the worms from the adjoining part in the same manner. Or remove them to a paper on a side table—take away the paper containing the litter from which the worms have been removed and put the paper on which they now are, in its place. During the first and second age, feed the worms with young and tender leaves of mulberry, lettuce, or some other substitute. During the third age full grown leaves may be used, reserving however the largest and toughest, till the last age when they are most voraracious. As they advance in age, more and more food will be required, and the oftener the litter must be removed. By these means the health of the worms will be preserved and the process sooner brought to a conclusion. In the the fifth or last age, they should have new leaves as often as the previous supply is consumed, until they are observed to creep over the leaves without eating. Silk worms eat and work by night as well as by day—in their last age they should be well *foddered* at bed time. You may know when the worms are ripe, or ready to rise and form their cocoons, by observing them with attention. They now look transparent, of the color of the green gage plum, are somewhat diminished in size,—they wander about without eating and try to climb.

Before the worms begin to mount and spin their cocoons, they void their excrements. Feeble worms, that have not strength for this, die in the attempt, and many worms are sometimes lost at this period—they should at this time be kept as clean as possible, and the dead worms removed as soon as discovered.

No bad smells, no smoke of tobacco or any thing else should ever be allowed to corrupt the pure air of the laboratory.

Diseases of Silk Worms.—The diseases of silk worms generally arise from the want of sufficient air and space—from not being kept clean and dry—from irregular feeding—damaged food—the fermentation of their litter—damp and bad air, &c. Great care in regard to these particulars is required during the

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whole term of the insect's existence as a worm. Pure food, pure air and sufficient space will generally keep them healthy and vigorous. Should, however, some general sickness shew itself among them, they should be removed into another room—to other shelves and a purer air—or the shelves should be thoroughly cleansed and the air of the room purified by the use of the Chloride of Lime or Chloride of Soda. This article may be obtained at the apothecary's. It may be used according to the directions usually sold with it for disinfecting silk worms.

Preparation for the Cocoons, &c.—Previous to the rising of the worms, little arches or cabins should be formed between the shelves by setting up brush wood, broom corn, or what Cobb prefers, small branches of oak, cut and dried a few days previous, with the leaves on, with their tops spread and pressing against the bottom of the shelf next above that where the worms have been fed, and which supports the stems of the brush. The worms will readily climb these little trees, and spin their cocoons in them. Each worm will be three or four days spinning the cocoon. All fed on the same shelf, will generally finish their work in eight days—from the time when the first began to spin. The brush may be then taken down, the cocoons taken off—the floss or loose tow picked off from the brush and from the cocoons—which must be saved and manufactured like cotton or wool by carding and spinning.

Management of the Cocoons.—A selection must be made of the cocoons which are destined for seed and those which are to be sold or manufactured. The best should be preserved for seed. They are distinguished by their straw color, their greater hardness, chiefly at the extremities, and by the superior fineness of their web. The best are a little depressed in the middle as if tightened by a ring, and they are not the largest. There are no certain signs to distinguish the cocoons which are to produce the male moth, but experience teaches that the smaller which are sharper at one or both ends and most depressed in the middle, generally produces a male, and that a round full cocoon contains a female. Could it be well ascertained which are male and which are female, it would be well to preserve double the

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number of the latter. These cocoons, stripped of the floss, may either be spread on a shelf or strung upon a thread, care being taken not to pierce entirely through the cocoon—and hung up till such times as the moths or butterflies come out, which will take place in twelve, sixteen or twenty days—in proportion to the degree of heat of the room.

In the cocoons designed for the manufactures, the chrysalis or living insect within them, must be killed within ten days after their formation, or the silk will be greatly injured. This may be done by placing then in an oven moderately heated or in the steam of boiling water, or they may be put into a tin vessel with a cover and this vessel set in boiling water for a half hour or more. The cocoons are then spread and dried. After this operation the cocoons are ready for the reel or sale. If the culturist should undertake to reel the silk, however, it would be better to do it before the insect naturally pierces them—because the silk winds off more easily than afterwards. In being cured they lose about twenty five per cent in weight.

Management of the Butterflies.—As soon as the butterflies come out of the cocoons, they attach themselves to their mates. After they separate or can be readily separated the males should be taken away and shut up in a box—the females placed on cloth or sheets of paper, allowing to each about two square inches. They will begin to lay their eggs in twenty four or thirty six hours, each producing three or four hundred eggs, which they attach to the cloth or paper, in close and regular order. On the day following, the same males may be allowed to pair with other females should there be a larger number of the latter than the former. From the time they pierce the cocoon they should be kept in a dark room or one from which the sun and much of its light is excluded. As soon as the butterflies on one sheet have done laying their eggs it should be folded up and put in some cool dry place until wanted for use the next summer. If kept in a cellar, the eggs should be occasionally, on cool drying days, taken out and exposed to the air, to prevent the injurious effects of mould which would otherwise soon cover them. Should the eggs remain exposed to the hot weather, they will sometimes

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hatch the same season. The butterflies eat nothing after leaving the cocoons, and die in a few days after depositing their eggs, and may be given to fowls.

Estimates of Profits, &c.—An acre of mulberry trees, five years old, will yield without greatly retarding their growth two tons of leaves weighed as taken from the tree. This will afford sufficient food for seventy five thousand worms. Seventy five thousand worms, successfully managed, will make two hundred pounds of cocoons, equal to twenty-five pounds of raw silk, worth at the lowest price seventy-five dollars. The same manufactured into sewing silk, would be worth at least one hundred and twenty five dollars. According to the calculations of the silk culturists in Connecticut and Philadelphia, the worth of the leaves and labour may be estimated as follows:—

4000 lbs. of leaves on the trees at half a cent per lb.		$20
Labour in gathering the same,		20
Labour in feeding and managing the worms,		20
Cost in worms,	60	
Profit,	15	
Reeling the silk,		10
Spinning the same,		20
		90
Sewing silk at $5 per lb.		125
Profit,	35	

John Fitch, Esq. of Mansfield, Connecticut, estimates the produce of an acre of full grown mulberry trees, set one and a half rods apart, at forty pounds of silk, worth $200

Labour and board,	114
Net profit,	86

Mr. J. D'Homergue, a French gentleman now in the United States, who is said to be perfectly well acquainted with all the details of the silk culture and manufacture, makes the following estimate. "In one acre of land there are 43,560 square feet, on which may be planted 3,000 mulberry trees. These will yield, at the age of seven years, 90,000 pounds of leaves

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producing 7,500 pounds of cocoons. At twenty-five cents per pound, these cocoons would sell for 1,875 dollars. In Mansfield, (Conn.) where from three to four tons of silk are made annually, it is said that the farmers "consider the amount received for their sewing silk as so much clear gain, as the business does not interfere with the regular farm work of the men or the domestic duties of the females upon whom, with the aged and youthful members of the family, the care of the worms and the making of sewing silk chiefly devolves." Those farmers whose families contain no youthful or aged members, or females without full employment, should not be deterred from planting mulberry trees, as we trust there will soon be in every town and parish, establishments where all the leaves raised in the vicinity will find a ready market at a cent per pound; and while the trees are growing, perhaps sons and daughters may spring up to bless their provident parents; orphan or indigent relatives may find beneath their hospitable roofs a home, and even the now robust and athletic may possibly become infirm and old, when the rearing of silk worms might perhaps afford them just such employment as they may most need, either for recreation or support.

REELING AND MANUFACTURING SILK.

"Those who do not choose to proceed any farther in the silk business than to raise the cocoons," says Cobb, "may realize a reward for their industry by selling the silk in that shape. There is no doubt but there will soon be established throughout the United States a regular market price for the article. But as raw, that is, reeled silk, is the shape in which the article must be sent to foreign manufacturers, if exported, and in which it meets with a cash market in almost every part of Europe, and in many parts of our own country, it becomes of great importance that we should reel the cocoons at least, and that in the most economical and profitable manner." The reeling of silk from the cocoons requires skill, practice, and experience. But let none be

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easily discouraged; perseverance and attention for a short season will enable them to become expert at the business, although the result of their first efforts may seem discouraging.

In European establishments, an extensive apparatus is used in reeling silk, but we in America are not obliged to follow their methods. The ingenuity of our countrymen will soon arrange a reeling apparatus by the family fireside, and that part of the year which cannot be employed in rearing the worms, may be in part devoted to reeling the cocoons to any pattern or degree of fineness. There is no more difficulty in it than there is in the manufacture of straw and many other articles, which now employs great numbers of our industrious females. In light manufactures, what others have done well, our ladies can do *as well or better.*

In preparing to reel the silk, the first thing to be done, is to sort the cocoons. The French make nine or ten qualities. "Before the cocoons are reeled, it is necessary to free them from that loose, fuzzy silk, which is on their outside, and is called floss; it being of so fine and loose a consistence, and partly broken by taking it from the branches, or frames, where the worms had spun them, that it cannot be reeled off. It may be taken off by opening it on one of the ends of the cocoons, and then thrusting out the hard part of them, clearing off, at the same time, the loose silk adhering close to them, and mixing this part with the floss, to make ordinary cheap silk. Then sort the cocoons according to their different degrees of hardness. If the strong, the tender, and the double ones are mixed, the trouble is not only greatly increased, but, in reeling, the threads frequently break, and the value of the silk is thereby lessened. For the proof of this, let us suppose only two cocoons, one compact and hard, and the other of a loose and soft substance, thrown together into the hot water, in order to be reeled off together, and to make one thread. If, now, the water be sufficiently hot to let the hardest of the two cocoons wind off with ease, by dissolving its gumminess, then that water will be too hot for the other, the substance of which is loose, so that it will run off in burrs; that is, flakes of the silk will come off without being drawn to their ex-

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tent; which burrs, as they pass the guide-wires, will endanger the breaking of the thread, filling it also with lumps and inequalities. On the other hand, if the water be of the proper temperature for the soft cocoon, so as not to occasion the above inconvenience, it will then not be hot enough for the hard cocoon, so that its thread will not be given off, without some stretch and violence, which endangers its breaking, and giving the trouble of adding a fresh cocoon; and, in both cases, the single fibres of the cocoons being unequally stretched in reeling, will make the combined thread the weaker, and less even and glossy; since the single fibre of that cocoon which was most stretched by the reel, will, upon disbanding, contract itself more than the other, and be separated from it in some places. On these accounts, having first separated the double cocoons, and also those which contain nothing but floss, with any others, which, being imperfectly formed, cannot be reeled, sort the perfect cocoons into three kinds, according to their different degrees of hardness, which can be readily perceived, and throw them into three different baskets.

"The cocoons may be divided into two general heads, or classes; the white and the yellow. In the yellow, we meet with all the shades from a bright yellow, diminishing, at last, to white; some few are a pale green. We may reckon nine different qualities of cocoons, which are met with, more or less, in all filatures or reeling establishments.

"1. The good cocoons are those which are brought to perfection, and are strong, hard, of a fine grain, and little or not at all spotted.

"2. The pointed cocoons are those, of which one of the extremities rises up in a point. After having afforded a little silk, the point which is the weakest part, breaks, or tears, and it is impossible to continue to wind them any longer; because, when the thread comes round to the hole, it is, of consequence, broken, and the whole contains nothing but ends.

"3. The cocalons are a little larger than the others; yet they do not contain more silk, because their texture is not so strong.

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"4. The dupion, or double cocoons, are so called, because they contain two, and sometimes three worms. They interlace their threads, and make the silk called dupion.

"5. The souffions are imperfect cocoons, the contexture of which is loose, sometimes to that degree that they are transparent, and bear the same proportion to a good cocoon, as a gauze to a satin. These cannot be wound.

"6. The perforated cocoons are so called, because they have a hole at one end; for which reason they also cannot be wound.

"7. The calcined cocoons are those in which the worm, after the formation of the cocoon, is attacked with a sickness, which sometimes petrifies it, and, at other times, reduces it to a fine white powder, without in the least damaging the silk. On the contrary, these cocoons produce more silk than the others, because the worm is lighter. They are to be distinguished by the noise the petrified worm makes when the cocoon is shaken. In Piedmont, they sell for much more than others. It is very rare to see a parcel of 25 lb. of them at a time: 6 lb. 3 oz. of these cocoons have produced 1 lb. fine silk, of five and six cocoons.

"8. The good choquette, consists of those cocoons in which the worm dies before it is brought to perfection: they are to be known by the worms sticking to one side of the cocoon, which is easily to be perceived, when, on shaking it, the chrysalis is not heard to rattle. These cocoons are of as fine silk as the others, but they are to be wound separately, because they are subject to furze out, and the silk has not so bright a color, nor is it strong and nervous.

"9. The bad choquette is composed of defective cocoons, spotted or rotten; many of these cocoons may be wound together; they make very foul, bad silk, of a blackish color.

"To judge whether a cocoon be good, observe if it be firm and sound; if it has a fine grain, and the two ends round and strong, and capable of resisting pressure between the thumb and finger. The cocoons of a bright yellow yield more silk than the others, because they have more gum; but this accounts to the winder only, because all the gum is lost in dying. Pale cocoons

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have less gum, lose less in winding, and take a better white or pale blue.

"To the foregoing kinds of cocoons, another is mentioned in recent French works, and called sattiny. Its tissue is coarse and like flannel, and the surface shines. The silk of this cocoon is bad."

Perhaps it may not be necessary generally to make so many kinds; but by studying the foregoing, every one may be enabled to select such as will reel well together. The most simple but not the best method of reeling and manufacturing silk is that practised in Connecticut, as described by Cobb :—

"In the first place the cocoons are stripped of their floss and sorted according to their quality. Then a large kettle set in a furnace or in an arch is filled with water, and a fire is kept under it; and when it is about to boil a quart of cocoons is thrown into it. They are immediately stirred perpendicularly in the water by a bunch of broom-corn tied close together as large as a person's arm, and cut square at the end, or by a corn broom, or something similar. In this way the ends are collected and attached to the bushy extremity. They are then drawn up by shaking the broom or whatever they are collected with, up and down in order to keep the cocoons in the water, otherwise they would rise. If enough for a thread is not collected the first time, those ends that are drawn up are taken off the bush with the hand and drawn to one side of the kettle. The process is then repeated until a sufficient number is collected to form a thread of the size required, which is usually from eighty to one hundred and fifty cocoons.

"Reeling is then commenced on a common hand reel, (such as is in common use in families in New England for reeling yarn from the spinning wheel), and the silk fibres run off about as fast and with as little difficulty as yarn from a spindle. Some of the cocoons run off before others; and when on this account the thread becomes too small, all the fibres are broken off, and what is reeled is tied by itself on the reel and another quart of cocoons is thrown into the kettle; the ends are collected and reeled in the same way as before, and each separate piece is tied by it-

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self. When the reel is full the pieces are all tied together, taken off and immediately dried.

"Most of this silk is manufactured into sewing silk and twist in the following manner:—it is immersed for a few moments in boiling water, taken out, put on swifts, and spun or twisted on a common woollen wheel, beginning at the large end of the piece, that is at the end which was reeled first; and when it becomes too small, which is the case when half or two thirds is run off, the small end of another piece is added to it, and thus they are twisted together. It is then spooled directly off the spindle; a sufficient number of spools is put into a small spool frame to make a thread of proper size, which is twisted again while it is moist. It is then reeled again and cleansed by boiling in strong suds for three hours, then dried and colored. Undergoing this process it shrinks about one half in weight; after this, for sewing silk, it is doubled, twisted, and reeled on a reel two yards long, and is divided into skeins of twenty threads each, as the statute of that State requires. If it be calculated for twist, it is made three threaded, twisted and done up into sticks with a small hand machine, and is then ready for the market. The floss, or tow, as it is called, is boiled in strong suds for three hours, dried, picked, carded, and spun on a common wool wheel. The yarn is woven into cloth, which is worn by the women for every day gowns. It is sometimes manufactured into very strong and durable carpets.

"Those cocoons that the grubs have pierced are boiled as above and dried. The end that is not pierced is cut off; they are then spun on a linen wheel like worsted, beginning at the end cut. It is then twisted together, three threaded, and knit into stockings.

"The imperfect cocoons, and all that will not reel, are boiled, carded, spun and manufactured in all respects like floss, but they make nicer and finer cloth.

"The Connecticut sewing silk does not bring a higher price than the reeled silk as it comes from my reel. As there is a loss of one half of the weight in the preparation of sewing silk, it is evident that to reel it properly and

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sell it for raw silk would bring a hundred per cent more profit."

A better method is to use a different kind of reel. Several reels differing somewhat in their construction although made on nearly the same principle, are in use in this country, for descriptions of which we would refer our readers to Cobb's Manual, Rush's Letter to the 20th Congress, &c. &c. Whatever reel is used, the different layers of silk must not be permitted to be parallel to nor upon but cross one another. Without this crossing, the threads from their gummy nature would inevitably adhere and render the subsequent windings and twisting of the silk very difficult. This sticking together of the silk is called glazing. The mechanism of the reels above mentioned prevents the threads lying over each other on the reel till after it has made many revolutions and former threads have dried, and hence no adhesion takes place between them.

"The reeling may be done at any season, but best in dry weather; it may be carried on in the dwelling-house or in a shed, or other convenient out-building.

"The softest water should be chosen for soaking the cocoons. The proper temperature cannot be ascertained until the reeling is commenced, owing to the different composition of the silk. It is as well to raise it to near the boiling point, and then, if necessary to lower it, cold water may be added. The soft or satiny cocoons require water less heated than the others. If too hot water be used they furze out in unwinding. The dupions or double cocoons require the hottest water. The fire under the basin may be lessened or increased, as the occasion may require; a little attention will soon enable the person who has the management of the basin to preserve the water at the proper degree of heat. The reeling is effected by use of a silk reel, and a basin of water set over a moderate fire in a small furnace. The person charged with the management of the cocoons in the basin must be provided with a small whisk of broom corn, or birch twigs, cut sharp at the points; and being seated behind the basin, previously filled with hot soft water, and placed upon a furnace, containing burning charcoal, she must throw into the

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water a handful of the cocoons, and press them gently under the water for two or three minutes, in order to soften the gum of the silk, and thereby to loosen the ends of the filaments. She is then to stir the cocoons with the end of the whisk as lightly as possible, until one or more of the fibres or filaments adhere to it; when, disengaging it, and laying aside the whisk, she is to draw the filament towards her, until it come off quite clean from the floss which always surrounds the cocoon, and the fine silk begins to appear; then breaking off the thread, and collecting the floss first taken off, she must put it aside; the whisk is then to be applied again to get hold of the firm fibres, and again, until a sufficient number are procured to form the thread of silk required to be wound off. This done, she is to unite a number of the fibres, according to the fineness of the intended thread, and deliver the compound thread to the reeler, who puts it through the guides; another thread is in like manner to be prepared and passed through the other guides, when two skeins are to be wound, and they may be crossed; the threads are then raised forward and made fast to one of the arms of it.

"Both threads being fastened to the reel, it is to be turned with a regular, even motion, at first slowly, until the threads are found to run freely and easily; for it will happen that some of the ends which were taken to compose the thread were false, because on taking off the floss there may be two or three breaches made in the beginning of the fibres, which, in winding, will soon end, and must be added anew, to make up the number designed for the thread.

"It is proper, therefore, in the beginning of the thread, to put a few more cocoons than it is intended to continue, as they will soon be reduced to the proper number. The crossing of the threads is considered an improvement, though it is sometimes reeled without crossing.

"As soon as the pods begin to give the threads freely, the reel is turned with a quicker motion. If the pods leap up often to the guide, the reel must be slackened, and the spinner may let the thread pass between the thumb and finger before it reaches the guide. If the thread comes off in burrs, it must be

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turned quicker. The fire may at any time be increased or diminished, as found necessary, that the reel may be allowed a proper motion, which ought to be as quick as possible without endangering the breaking of the thread, or hurrying the spinner, so that she cannot add fresh cocoons, as fast as the old ones are ended. The quicker the motion of the wheel is, the better the silk winds off and the better the end joins to the thread. One might imagine that the rapidity of the motion might overstrain and break the thread; but from constant experience it has been found that the thread never breaks from the rapidity of the motion; but on the contrary, the quicker the motion is, the more advantageous it is for winding the silk.

"While the reel is turning, the spinner must continually add fresh fibres to each thread as fast as she can find the ends, not waiting till some of the number she began with are ended, because the internal fibres are much thinner than those constituting the external layers, but must constantly prepare fresh ends by dipping the whisk among fresh cocoons, of which such a quantity must be occasionally thrown into the basin as will suffice to supply the threads which are reeling, but not more.

"The cocoons thrown in must be often forced under water that they may be equally soaked, for as they swim with their greater part above water, that part would remain hard and stubborn, while the part which is under water would be too much soaked; some hot water may be thrown upon them frequently with a brush, and also on the cocoons which are reeling, when they grow dry at the top and yield the fibres with difficulty. The supplying fresh ends when the cocoons are exhausted, or diminished, or the fibres break, is performed by taking one end of a fibre and throwing it lightly on the one that is winding, and rolling them between the thumb and finger, or gently pressing them.

"As often, therefore, as the cocoons partially wound, are exhausted, or the fibres break, fresh ones must be joined to keep up the number requisite, or the proportion; thus three new ones may be wound and two half wound, or four new ones, and the silk will then be a thread of four or five cocoons. The adroitness in adding fresh ends can only be acquired by practice. The

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fficulty of keeping the thread even is so great, owing to the ncreased fineness of the fibre inside, that we do not say a silk of three or of four or of six cocoons, but a silk of three to four, of four to five, and of six to seven.

"In coarser silk we do not calculate so nicely as one cocoon more or less; we say for example from twelve to fifteen, from fifteen to twenty cocoons. In beginning a thread of ten cocoons, from sixteen to twenty will sometimes be required to preserve a uniform thread, after a portion of the first layer has been wound off. The quantity of silk which can be reeled in any given time, is in proportion to the quickness with which the spinner can add fresh cocoons. Thus, if we suppose that every cocoon at a medium, will either break or be wound off at the end of every five hundred feet, then, if five such pods are reeled together, one will be wanted to every hundred feet that are reeled; if ten are reeled together, one will be wanted at every fifty feet; if sixteen together, then at thirty-one feet, and so on. The seldomer cocoons end, or break, the greater number of them can one spinner attend, which shows the advantage of sound cocoons and of expert management in reeling.

"The cocoons which wind off in part only and the shells must not be permitted to remain in the water, as they will obscure and thicken the water, and injure the color and lustre of the silk, which can then be used only for dark colors. The shells should be buried to prevent their being offensive; as a general rule, the water should be changed as soon as it becomes discolored.

"When the spent cocoons leap up and adhere to the guide wires, they must be immediately taken away, else by choking the passage they will endanger the breaking of the thread.

"When the reel has remained any time idle, the thread between the basin and the wires may be wet, to cause the thread to run easily.

"In winding off the best cocoons some defective ones will be found amongst them which will not wind off or are full of knobs; these should be taken out of the basin immediately in order to be wound by themselves.

"The breaking of the fibres is principally owing either to bad

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cocoons, viz. being ill formed, (as they will be when the worms were disturbed and interrupted during their spinning,) or the fibres may break by improper regulation of heat in the water; first, when it is not sufficient to make the silk come off easy, or second, when it is too great and occasions burrs, which may stop at the holes through which the thread runs; cocoons also which have two worms inclosed will perpetually break; the whole thread may also break, by burrs stopping at the holes of the guides, or by the reel being turned by jerks. It may be fastened like the fibres, by laying the parts on one another, and giving them a little twist.

"A sharp fork may be conveniently made use of to draw away the spent cocoons, or such as being nearly spent, stick at the holes in the guides; and as the whisk will frequently take up more ends than are immediately to be added, and as the spinner will sometimes have occasion to employ both her hands, the brush may at that time be conveniently hung up by the basin, while the cocoons which are attached to it remain in the water, and the ends will be in readiness as they are wanted. If the spinner be under the necessity of leaving off work for any length of time, the cocoons should all be raised with a skimming dish out of the water till her return, otherwise by oversoaking they would wind off in burrs; but it is best to continue the reeling without interruption, and to let fresh, but equally experienced persons, succeed those who are tired. The person who turns the wheel should have an eye to the threads and to the guide wires through which they pass, that he may apprise the spinner when any thing is wrong; for her eyes will be sufficiently employed about the cocoons. The reeler may also rectify anything discovered to be amiss in those parts of the thread which are near the reel, for one hand will always be employed, and a stop must occasionally take place.

"As the heat of the water in the basin will require to be varied according to the ease or difficulty with which the different sorts of cocoons give off their silk, the spinner should always have some cold water within reach, in order to cool that in the basin quickly, when the silk comes off too easily and in burrs.

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The water is also necessary for the woman managing the cocoons, to cool her fingers. More fuel should also be at hand to increase the heat quickly, when the cocoons do not give off their silk readily.

"If there should happen to be any sand in the water, the heat causes it to rise to the surface and fix on the cocoons, the thread of which will break as if cut; for this reason the utmost care must be taken to guard against it, and to remove it. Previously to being boiled, the water should be permitted to settle, and the pan must be carefully wiped. If necessary, the basin may be covered while the water is heating.

"When the cocoons are first put in water, if the silk rises thick upon the brush or comes up in lumps, it is a sign that the water is too hot; if the thread cannot be caught, the water is too cold: when the cocoons are in play if they rise often to the guide wires, the water is too hot: if the cocoons do not follow the threads, it is too cold.

"Mr. Nouaille says, that a woman at Novi, (Italy,) experienced in the business, with the assistance of a girl to turn the reel and attend to the fire under the cauldron, can with ease reel off one pound of silk consisting of four or five cocoons of the most perfect quality in a day. I am credibly informed that the price of silk reeled according to the above directions, in Europe, is from four to seven dollars, according to its fineness. Mr. D'Homergue says a woman may now reel three pounds in a day. Mr. Brown thought he could reel a pound in a day upon my improved reel, but I have never been able to have the finer qualities of silk reeled so rapidly in my family. The silk reeled upon my reel* sells for $4,50 per pound as it comes from the reel, and some at a higher price. My reel is similar to the Piedmontese, with some considerable improvements; it is finished in a much neater style than any I have seen in this country; it is portable and will be furnished to any who may apply, for the sum of twenty-five dollars.

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*The fringe of the curtains in the house of Hon. Daniel Webster of Boston, was made by Mr. Brown from silk raised by me and reeled in my filature.—*Ed. Cobb's Manual.*

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"In preparing the dupions or double cocoons for winding, more are put into the basin at once than of the finest kind. They must be first well cleaned from the floss outside; the water also must be boiling hot, and as the silk they yield is of a coarser quality than the other, and has a good deal of floss upon it, the person who turns the reel must take the opportunity, while the one who manages the basin is preparing the cocoons for winding, to clean and pick off the loose silk from that which is on the reel. These make a coarser thread of fifteen to twenty cocoons; and perhaps as coarse as from forty to fifty cocoons; it is useful for filling in coarser stuffs and likewise for sewing silk.

"The satiny cocoons require water only moderately heated. The proper heat will be found by observing the manner in which the silk comes off from the first of them which are put in a basin, and as already said of cocoons generally, if it come off thick, cold water must be added until the proper temperature be attained. The gum is taken out of the silk by boiling it in soap suds."

MISCELLANEOUS REMARKS.

In the preceding essay, we have spoken only of the dark gray or drab colored worms, which are most common in the United States. There are other varieties worthy of notice.

1. Small silk worms, of three casts or moultings. They are two-fifths less than the common sort, their cocoons are better constructed and composed of finer and more beautiful silk, and require four days less of care. "If I reared silk worms for the purpose of spinning the silk myself," says Dandolo, "I would cultivate only the silk worm of three casts, and those that produce white silk, as preferable to all others; and every year would choose the very finest and whitest cocoons for seed, to prevent the degeneration of the species."

2. There is also in Connecticut, a pale white worm, which eats but twenty days, and produces fine white silk, which does not turn yellow by washing.

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3. There is also the large pale white worm, producing white silk, and worms that produce orange colored silk, which are probably varieties of the large drab colored worm. The orange colored are not so valuable as the straw colored or white cocoons.

Several crops in succession may be produced the same year, if the eggs be kept in an ice house till wanted; or a second or third crop may be obtained from the eggs produced by the first or second. The eggs of the silk worm will bear a greater degree of heat without hatching, the same season they are laid, than is required to hatch them the following spring. By being chilled the preceding winter, they acquire a greater sensibility to heat, and a greater disposition to hatch. When we wish to hatch them the same season they are laid, this process of nature must be imitated. Let the butterflies come out of the cocoons and lay their eggs in a cool place, let the eggs be placed awhile in an ice house or a cold cellar, and then exposed to continued heat, kept up artificially, somewhere between eighty and one hundred degrees of Fahrenheit, in an atmosphere kept moist by steam, until they hatch. Worms for a second crop may be hatched ten or more days before the preceding crop are expected to complete their cocoons, as they will require but little space before the shelves may be cleared for them.

We have said that the leaves on which the worms are fed must be dry, that is, must have no water adhering to them. Wet leaves produce sickness. But in large establishments, during the last age of the worms, a large quantity must be consumed daily, and during long storms it may become necessary to gather the leaves wet, and as necessary to dry them. This may be done by spreading them before a brisk fire, continually turning them with a fork; or by putting twenty or thirty pounds into a dry sheet, folding it into the form of a sack, in which if shaken from one end of the sheet to the other by two persons taking hold of the four corners, they will in a few moments appear quite dry; or by many other means which the ingenuity of the silk culturist may suggest.

The leaves of trees which grow in moist grounds, or shaded from the sun, those from suckers, &c., which are full of sap and

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moisture, crude and immature, produce fatal distempers in silk worms. Over feeding or scantiness of food causes disease. A change of the kind of food suddenly made, from the white to the native red, or to the black mulberry, or when this order is reversed, causes disease. Change of nourishment, when necessary, should be gradual. The greatest danger from the change of food is in the last age.

Sudden changes of temperature, either from hot to cold or cold to hot, such as frequently happen in our climate, unless well guarded against produce disease. Silk-worms, like other caterpillars, breathe through little holes in their sides near the belly. Any slimy or oily liquid stops these holes and kills them. Hence also arises the danger of feeding too many on a given space, or of suffering them to become filthy.

In compiling the foregoing, we have selected such rules, remarks and observations as seemed most important in the voluminous writings of others on this subject. In applying them to practice the silk culturist must think for himself, and let reasoning supply the deficiency in these instructions. Our purpose will be well answered if we shall have been able to excite attention to the culture of silk—shall have made those who may be desirous of engaging in it, sufficiently acquainted with the nature, wants and habits of this insect, to enable them to think correctly and act judiciously in this important business. And while the mechanic and manufacturer with an enterprise worthy of much praise are causing the elements themselves to work day and night for their support and aggrandizement, let it not be said that the farmer alone refuses to avail himself of any of those means of improving his condition which a benevolent Deity has placed within his reach. The farmer who, pent up in no workshop, who roams at large over his fields, and views continually the wonderful operations of nature, above, below and around him, must be without excuse if he does not take the most enlightened and enlarged views of the great interests of his country and the world, or fails to devote his powers to the promotion of the greatest good of his species—the first step towards the accomplishment of which is to make himself influential and happy.

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MR. PERRY'S EXPERIMENT IN RAISING SILK.

BRADFORD, FEB. 27, 1832.

MOSES NEWELL, Esq.

Dear Sir,

It appears reasonable that while the Essex County Agricultural Society is offering its patronage to encourage the cultivation of the mulberry tree, and the producing of silk, that it should in return be furnished with the information which experiments may afford those who have been benefitted by its patronage. With this impression, I send you a few observations relative to the raising of Silk, drawn from a small experiment made by me the season past.

Last year I raised several thousand worms of three kinds; one gray and two white.

For the first crop, the eggs were put in rooms, without artificial heat and hatched the last week in May and the first in June.

The gray came	to	maturity in	35 days.
1 of white	"	"	32
2 of white	"	"	28 or 29

Parcels of the eggs of each kind produced by miller, from the worms, were kept in the same room for the purpose of ascertaining whether they would hatch another time the same season without artificial heat, or even greater heat than would be found in any common apartment at that season. In about eight days from the depositing of the egg of the second kind of white, they all hatched in fine order to the amount of some thousand, while the eggs of the other two remained the whole summer in the same situation without being very sensibly affected with the heat, and in fact a part of them remain still in the same place exposed without covering in a room without fire, where I have let them remain to try the effect of cold. How it will terminate with them I cannot say; they appear now to be in a sound and healthful state. The eggs of these last I procured

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of a friend in Bristol County; the others from Mr. Boynton of Newbury; to both of whom I am under much obligation for the important and truly practical information very readily given on the subject of feeding the worms. Mr. Boynton has had a second crop of the white worm furnished me.

I raised three crops of worms on the same tables. Five crops might be raised by anticipating the spinning of one by the hatching of another, and keeping them the first ten days on smaller fixtures, as they then need occupy but little space.

My own observation would not justify cutting the leaves into pieces to feed them when young, either upon the principle of economy or for the benefit and safety of the worm. The more tender leaves should be gathered for the young, but they should be given whole. My impression, also, is that it is better to cut off the small limbs and give them to the worms with the leaves on them than to strip the leaves off. The worms feed better this way, eat the leaves more closely, have better opportunity to move and enjoy better air, and are more easily transferred from one table to another when cleaning becomes necessary, while it is necessary to perform this much less frequently when the limbs are used than when the leaves separately are spread out for them. I think also that the tree is much less injured in this way than by stripping it of its leaves. Trimming, even if it be severe and close, seldom injures trees; while exfoliating even if it be in a limited manner is almost always injurious. I may be mistaken, if I am the Directors of your Society are abundantly able to set me right, in the supposition that the putting forth of new limbs with leaves is much less exhausting to trees of any kind, than the putting forth of new leaves from limbs exfoliated in the heat of summer.

I have seen it observed somewhere, that the dried leaves of a former year, prepared by pulverizing and wetting, will answer to feed the young worm when first hatched in the spring. I cannot speak from experience on this subject. I have some leaves in keeping to try this season. I have, however, reason from the following circumstance to think that they will answer that purpose. Many of the ends of the small limbs of my mulberry

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trees were killed by the cold of the preceding winter; in cutting the limbs for the worms these dead ends were not taken off;—a very few days had passed before we observed the worms feeding upon the dead bark of these limbs, evidently preferring it for a part of their food to the fresh and green leaves which were given them in abundance. And this propensity was observed during the summer in each successive crop, (and I had four) though as the leaves grew harder and drier as the season advanced, the worms were not seen so frequently in the dry limbs.

From the little experiment I made I am very much convinced of these two things: first, that under favorable circumstances the raising of silk will yield a very good profit. And secondly, that it is a much less intricate and difficult business than a person would be apt to suppose from the account given in most treatises on the subject. Mine were taken care of mostly by my son, a lad of ten years.

For the purpose of extending a knowledge on this subject through the community, the students attending Merrimac Academy this season, under the care of Mr. S. Morse, will have an opportunity of observing the whole process of raising the worms, &c. in a room near the academy building, which will be open to them from day to day. And every circumstance, as far as understood, freely and fully explained to them by the person who has the care of the establishment.

My mulberry trees continue in a very thriving condition, and afford the most abundant evidence of the advantage obtained by pruning and fashioning the roots as well as tops when they were transplanted.

With my best wishes for the prosperity of the Society in its highly commendable efforts, I am, sir, with much personal respect, yours, GARDNER B. PERRY.

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)M OUNCE OF EGGS.

BSENS.

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vo fiargest.
puteated. Worms casting their second skins.

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" the last, least
ibutequired. Third casting of their skins.
" " Worms are roused.

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; thee least, the last 18 lbs.
ree lbs. each.
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prepare to cast their skins.
rouse

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1
3
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EXPLANATION OF THE PLATE.

1. The egg, or the development and birth of the silk worm.
2. Silk worms during the first age—5 days.
3. Silk worms in the second age—4 days.
4. Silk worms in the third age—6 days.
5. Silk worms in the fourth age—7 days.
6. Silk worms in the fifth age—11 days.
7. A species of silk worm of dark grey color.
8. The Cocoons.
9. Two open cocoons, with their grubs—the upper one containing only the shell of a developed chrysalis—the lower, the mature chrysalis.
10. A cocoon from which the butterfly is near emerging.
11. A cocoon from which the butterfly has escaped.
12. Butterflies coupling.
13. Female butterfly, laying eggs.

The branch of the mulberry tree, represented in the plate, should not be overlooked. The leaf is less indented, rounder, and larger than others less valuable. From trees with leaves like this, scions for grafting should be taken.

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DR. ESSEX AGRICULTURAL SOCIETY IN ACCOUNT WITH ANDREW NICHOLS, TREASURER, CR.

1830. Jan. 17.	To am't of payment of premiums, printer's bills, &c. &c. since the last account stated, viz. Jan 4, 1831	$605 00	Jan. 4.	By balance of account stated		$325 85
	To amount of money loaned on int.	300 00	1832. Jan. 17.	By interest and Bank dividends rec'd		228 52
	To balance	823 62	"	By cash of new members		262 00
			"	By repayment of money loaned		288 00
			"	By cash refunded by J. Kittredge		24 25
			"	By State's Bounty for the year 1831		600 00
		$1728 62				$1728 62

STATE OF THE SOCIETY'S FUNDS.

In the Savings Bank, Salem, with the interest accrued since October, 1829	$ 489 20
Thirty-nine shares in Banks in Salem, estimated at their par value	3170 00
Individualnotes with satisfactory security	924 00
Individual obligations to be accountable for fees of new members	59 00
Cash in the treasury	824 62
	$5465 82

Errors excepted.

Danvers, January 17, 1832.

ANDREW NICHOLS, TREASURER.

ESTIMATE OF THE SOCIETY'S EXPENSES, &c. FOR THE YEAR 1831.

Amount of premiums and gratuities awarded	$ 395 00
Amount of bills for printing pamphlet and other publications	110 50
Expenses paid incident to the Exhibition at Andover	15 77
Expenses paid by the Committee on Farms	9 00
Stationary, postage, and other incidental payments, (estimated at)	10 00
Compensation voted the Secretary, by the Board of Trustees	50 00
Amounting to	$ 590 27

Attest, JOHN W. PROCTOR, SECRETARY.

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PREMIUMS

OFFERED BY THE ESSEX AGRICULTURAL SOCIETY IN 1832.

—

I. MANAGEMENT OF FARMS.

For improvements and skill in husbandry, taking into view the entire farm and its appendages—

The best,	thirty dollars;
The second,	twenty-seven dollars;
The third,	twenty-four dollars;
The fourth,	twenty-one dollars;
The fifth,	eighteen dollars;
The sixth,	fifteen dollars.

REMARKS.

At the meeting of the Trustees in January, 1832,—in consequence of the number of applications for the premiums on farms having been so few; and the plan heretofore pursued of offering these premiums having failed, in some degree, to bring forward to the notice of the Committee, those farms in the county, from the examination of which the most useful information is likely to be derived for the benefit of the Society,—it was voted, in substance—

"That the premiums for Farms be as at present arranged, and that in addition, it be recommended to the Trustees and the members of the Society generally to suggest to the Committee on Farms, such farms as they within their neighborhood may deem particularly deserving the attention of the Society, in which case it shall be the duty of the Secretary of the Society

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to notify such individual of the desire of the Committee to inspect his farm, and to receive a particular account of his husbandry; in which case, with the owner's consent, it shall be the duty of said committee to visit such farms and to present the details to the Society, in their reports, if they shall deem them useful and instructive.

"That in cases where such individuals may not be willing to become competitors for the premiums, the Committee may be at liberty to bestow such a gratuity for any distinguished improvement or extraordinary good management, as they may think proper—but in no case shall such gratuity exceed the amount of the highest premium offered."

It will be expected of the claimants of these premiums, that they will furnish to the Committee a statement in writing, as minute and particular as may be practicable, of the entire *condition*, *management* and *produce* of their farms.

These statements must be forwarded to the Secretary, on or before the last day of November the present year.

Claims for the premiums must be entered with the Secretary by the first of June.

The Committee to examine Farms in 1832, are

James H. Duncan,	of Haverhill;
Daniel Putnam,	of Danvers;
John W. Proctor,	of Danvers;
Thomas Payson,	of Rowley;
Richard Heath,	of Haverhill;
William Johnson, Jr.,	of Andover;
Moses Wildes,	of Topsfield.

II. DAIRY.

1. For the best produce of butter on any farm within the County, in proportion to the number of cows producing it, from the 1st of June to the 9th of July inclusive, in the present year; a sample of which, not less than fifty pounds, to be exhibited, twelve dollars.

For the second best, - - ten dollars.

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2. For the best produce of butter, on any farm within the County, from not less than four cows, in the six months next following the 20th of May the present year—a sample of not less than fifty pounds of this butter to be exhibited at the anniversary of the Society, *quality* as well as *quantity* to be taken into view, with a satisfactory account of the manner in which the cows have been fed, and the general management of the milk and butter, - - - - - twenty dollars.

3. For the best produce of new milk cheese, in proportion to the number of cows producing it, on any farm within the County, in the months of *June*, *July*, *August* and *September*, in the present year; a sample of which, not less than one hundred pounds to be exhibited, - - ten dollars.

For the second best, - - - eight dollars.

NOTE. It is expected of the claimants of these premiums, that they will furnish the Committee with a minute and accurate statement in writing of the entire management and produce of their dairy. The more particular such statements are made, the more satisfactory they will be to the Committee. As the object of offering these premiums is, principally to learn how to improve the process of making and preserving these articles.

III. TURNING IN GREEN CROPS AS A MANURE.

For the most satisfactory experiment of turning in green crops as a manure, on not less than one acre of land, a detailed account of the whole process to be given in writing, twenty dollars.

For the second best, - - - ten dollars.

IV. FOREST TREES.

The premiums heretofore offered to encourage the cultivation of Forest Trees, are ordered by the Trustees to be continued for four years next ensuing, to wit:

For the best plantation of *White Oak Trees*, raised from

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the seed, not less than one acre, nor less than one thousand trees, in the third year's growth - - thirty dollars.
For the second best do. - - twenty dollars.
For the third best do. - - - ten dollars.
For the best plantation of *Locust Trees*, with the same conditions, - - - - - - - twenty dollars.
For the second best do. - - fifteen dollars.
For the third best do. - - - ten dollars.
For the best plantation of *Larch Trees*, with the same conditions, - - - - - - - twenty dollars.
For the second best do. - - - fifteen dollars.
For the third best do. - - - ten dollars.
For the best plantation of *White Ash Trees*, with the same conditions, - - - - - - - twenty dollars.
For the second best do. - - - fifteen dollars.
For the third best do. - - - - ten dollars.
For the best plantation of *Chestnut Trees*, with the same conditions, - - - - - - - twenty dollars.
For the second best do. - - - fifteen dollars.
For the third best do. - - - ten dollars.

☞ Claims for these premiums may be entered with the Secretary of the Society. The plantations will be examined by Ebenezer Moseley of Newburyport, Andrew Nichols of Danvers, David Cummins of Salem, Benjamin Osgood of Methuen, and John Choate of Ipswich, a special committee for this purpose, in the third year after they are planted. A statement in writing of the entire process of cultivation will be required from the claimant.

V. CULTIVATION OF WHITE MULBERRY TREES FOR THE MAKING OF SILK.

For the best plantation of white mulberry trees, not less than half an acre, - - - - - twenty-five dollars.
For the second best - - - twenty dollars.

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For the best nursery of white mulberry trees, not exceeding two years growth, - - - twenty dollars.

For the second best, - - fifteen dollars.

For the best production of silk exhibited either in the cocoons or manufactured, together with an accurate statement of the whole management of the worms and amount of labor employed, produced by the enterprise of one family, fifteen dollars.

For the second best, - - - ten dollars.

☞ These premiums are offered, to be awarded in 1832, if meritorious claims shall be presented;—and they will probably be continued for the years 1833 and 1834, together with such others as the progress made in the cultivation of Silk in the County may warrant.

VI. IRRIGATION.

For the most satisfactory experiment for increasing the crops, upon not less than one acre of land, by irrigation, (that is turning water from its natural current so as from time to time to overflow the land) with a detailed account of the manner, expense, and benefits produced, - - twenty dollars.

N. B. Claims for this premium must be entered with the Secretary, so that the Committee for viewing Farms may have an opportunity of examining the crops while growing. If not awarded the present year, it will be continued for the next, and so on for four years, in the hope of producing some valuable experiments on this subject.

VII. PLOUGHING.

1. Double teams—

For the best performance in ploughing, twelve dollars.

For the second, - - - ten dollars.

For the third, - - - eight dollars.

For the fourth, - - - six dollars.

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2. Single teams—

For the best performance in ploughing, -	ten dollars.
For the second, - - -	eight dollars.
For the third, - - -	six dollars.
For the fourth, - - -	four dollars.

☞ Double teams will be required to plough not less than *seven* inches deep;—single teams not less than *five* inches deep;—and each about one quarter of an acre of land. The work is to be done without hurrying or worrying the cattle;—but in such a manner as the teams might continue their labor for three hours, without extraordinary fatigue. The best work, with least expense of labor, will be the test of merit. Particular regard will be had to the construction of the ploughs used,—as the main object in offering these premiums, is, to introduce to common use, ploughs of the best construction.

VIII. IMPROVEMENT OF AGRICULTURAL IMPLEMENTS.

To the persons who shall exhibit at the Show, any new or improved agricultural implement, the invention being his own, which shall in the opinion of the Trustees merit a reward—a premium shall be given not exceeding ten dollars.

☞ In all cases proof must be given of the work done by the implement before it is exhibited; and of its having been used and approved by some practical farmer.

IX. COMPARATIVE VALUE OF CROPS AS FOOD FOR CATTLE.

For the most satisfactory experiment upon a stock of Cattle, not less than four in number, in ascertaining the relative value of the different kinds of fodder used for the cattle, as compared with English hay, with a detailed account of the fodder used and

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the expense of raising the same; the experiment to be made in the three winter months, - - twenty dollars.
For the second best, - - - fifteen dollars.
For the third best, - - ten dollars.

☞ These premiums are offered, to be paid whenever a meritorious claim is presented to the Trustees, and will be continued for four years.

X. CIDER.

For the best barrel of cider that shall be produced at the Exhibition in 1833, made within the County, a premium of - - - - - fifteen dollars.
For the second best - - - ten dollars.

REMARKS.

These liberal premiums are offered for cider, with the hope of obtaining some valuable information, as to the process of *making* and *preserving* this article. Consequently it will be expected of the claimants that they will furnish a detailed statement of their entire management, from the time of gathering the fruit until the exhibition of the cider. Such a course of management, as could be imitated by our farmers generally, would have the preference. In these temperate times, when almost all honest men admit that the use of *ardent spirit* is unnecessary and injurious, when it is clearly proved that the best managed farms are those where the least *ardent spirit* is used, it is expected that no *ardent spirit* will be used in this process.

XI. POTATOES.

1. For the best conducted experiment in the raising of potatoes, on not less than half an acre of land, having regard to quantity and quality; a detailed statement of which is to be furnished the Committee in writing, - seven dollars.
For the second best do. do. - - five dollars.

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2. For the best conducted experiment in the raising of potatoes, from the seed of the apples or green balls—samples of not less than four quarts from each seed of the second year's growth, and the produce of not less than six seeds, to be produced at the Society's Exhibition in 1832, seven dollars.

For the second do. do. - - five dollars.

☞ For some interesting instructions on this subject, see the pamphlets heretofore published by the Society; and several communications in the New England Farmer, a valuable work, that should be in the possession of every farmer.

XII. IMPROVEMENT OF MEADOW LANDS.

For the best conducted experiment in improving, by draining, gravelling or otherwise, not less than three acres of wet meadow or swamp land, with a detailed account of the entire process and benefits, - - - - twenty dollars.

For the second best, - - ten dollars.

NOTE. Persons claiming these premiums must give notice to the Secretary, so that the Committee may view the crops while growing.

XIII. CULTIVATION OF WHEAT AND RYE.

For the best conducted experiment in the raising of wheat, on not less than one acre of land, - - ten dollars.

For the best conducted experiment in the raising of rye, on not less than one acre of land, - - ten dollars.

☞ A statement of the produce—the manner of preparing the ground—the kind of seed used—the manner of preparing the same, &c. &c., including all the details in relation to the crop, will be required to be handed to the Committee.

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XIV. ANIMALS TO BE PRODUCED AT THE EXHIBITION IN NEWBURY, ON THURSDAY, SEPTEMBER 27, A. D. 1832.

For the best bull, not less than one year old, on satisfactory assurance being given that he shall be kept for use in the County, at least twenty-two months from the day of exhibition, fifteen dollars.

For the second best do. do. do. - ten dollars.

For the third best do. do. do. - - five dollars.

☞ As the object in offering these premiums is to promote improvement in our breed of stock, the Trustees have thought it proper to direct, that persons who may receive the premiums shall sign an obligation to be left with the Secretary, that they will observe the conditions on which the premiums are offered, or forfeit the same, for the benefit of the Society.

For the best milch cow, not less than three nor more than ten years old, with satisfactory evidence, as to the quantity and quality of her milk, and the manner in which she has been fed, - - - - fifteen dollars.

For the second best do. do. do. - ten dollars.

For the third best do. do. do. - five dollars.

For the best heifer, that has been in milk three months or more, with satisfactory evidence of the quantity and good quality of her milk, - - - ten dollars.

For the second best do. do. do. - five dollars.

For the best pair of three year old steers, ten dollars.

For the second best do. - - five dollars.

For the best pair of two year old steers, five dollars.

The Trustees have thought proper to renew their premiums upon swine, and offer the following the present year:

For the best boar, - - five dollars.

For the second best, - - - three dollars.

For the best breeding sow, - five dollars.

For the second best, - - three dollars.

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For the best litter of weaned pigs, not less than four, from two to six months old - - - six dollars.
For the second best, - - three dollars.

☞ The person receiving a premium for a breeding sow, will be required to obligate himself to keep the animal for this purpose, at least one year from the time of Exhibition.

No animals will be entitled to receive more than one premium. Animals that have received one premium from the Society, will not be entitled to another, unless it be of a higher order.

Should any animals of fine quality, be presented at the public show, for exhibition, they shall receive such notice from the Trustees, as by their merits they are entitled to. And should they be of extraordinary quality, such gratuities will be tendered, as may reward their owners for exhibiting them.

XV. HORSES.

For the best horse raised in the County, not less than *three* nor more than *five* years old, - - twenty dollars.
For the second best, - - fifteen dollars.
For the third best, - - - ten dollars.

XVI. DOMESTIC MANUFACTURES.

For the best piece of carpeting, a yard wide, and not less than twenty yards to be exhibited, - - five dollars,
For the second best do. do. - three dollars.
For the best piece of stair carpeting, not less than twenty yards to be exhibited, - - - three dollars.
For the best straw or grass bonnet, - five dollars.
For the second best do. - - three dollars.
For the best wrought hearth rug, having regard both to the quality of the work, and the expense of the material, three dollars.
For the second best do. - - two dollars,

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For the best piece of woollen cloth 7-8ths of a yard wide, and twenty yards in quantity, - - five dollars.

For the second best do. - - three dollars.

For the best piece of flannel, a yard wide, and twenty yards in quantity, - - - - - four dollars.

For the second best do. do. - two dollars.

For the best wrought woollen hose, not less than four pair, - - - - - two dollars.

For the second best do. - - one dollar.

For the best men's half hose, not less than four pair, one dollar.

For the best silk hose, not less than three pair, two dollars.

For the best piece of linen cloth, not less than twenty yards, four dollars.

For the second best do. - - two dollars.

For the best piece of linen diaper, not less than twenty yards, - - - - three dollars,

For the second best do. - - two dollars.

For the best wrought counterpane, having regard to the quality and expense of the materials, - four dollars.

For the second best do. - - two dollars.

For the best specimen of wrought lace, three dollars.

For the second best, - - two dollars.

For the best specimen of work, performed by a child under twelve years of age, exhibiting industry and ingenuity, three dollars.

For the second best do, - - two dollars.

And should any other articles of domestic manufacture, be exhibited, worthy of attention, a proper notice will be taken of them, and suitable premiums awarded.

GENERAL REMARKS.

All claims for premiums, to be awarded on the day of Exhibition, must be entered with the Secretary of the Society on or before 9 o'clock, A. M. of that day.

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All other claims for premiums must be handed or forwarded to the Secretary in writing.

Claims for premiums on farms must be entered with the Secretary on or before the first day of June the present year.

All premiums awarded, the payment of which is not demanded of the Treasurer within *one year*, will be considered as generously given to increase the funds of the Society.

And all premiums heretofore awarded, the payment of which is not demanded of the Treasurer previous to the next Exhibition, will be applied in the same manner.

No animal, for which a premium has heretofore been awarded by this Society, will be entitled to another premium, unless it be of a higher order, and for qualities different from those for which the former premiums were awarded.

All persons intending to be competitors in the ploughing match, must give information thereof to the Secretary, or to Daniel Adams, 3d of Newbury, on or before the Monday preceding the day of Exhibition.

No person will be entitled to receive a premium, unless he complies with the condition on which the premiums are offered; and gives *notice as required* of his intention to claim the same.

In regard to all the subjects for which premiums are offered, it is to be distinctly understood, that the Trustees reserve to themselves the right of judging of the *quality* of the animal or article offered; and that no premiums will be awarded, unless the objects of them are of a decidedly *superior quality*.

By order of the Board of Trustees.

E. MOSELEY,
H. CLARK,
A. NICHOLS,
J. H. DUNCAN,
J. W. PROCTOR. } *Committee.*

January 17, 1832.

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NOTE.

There have been obtained in the course of the last year, by the exertions of several individuals, about one hundred new subscribers as members of the Society. Their names would have been published in this pamphlet, had it not already extended far beyond the dimensions contemplated.

Gentlemen, in the several towns of the County, interested in the Society, are requested to furnish the Secretary with correct lists of the names of members in their respective towns, designating those *deceased*, and those *removed* from the County ;—and when these are obtained, an entire catalogue of the members, together with the Constitution of the Society, will be published.

ERRATA.

Page 84. 7th line from bottom, strike out the word "although,"
88. 22d line, for "9," read "90."
108. 2d line, for "1830," read "1832."
110. For "Richard Heath, of Haverhill," read "of W. Newbury."

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